

AVIATION WEEK

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JUNE 6, 1949



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NEWS SIDELIGHTS

ALPA Secession?

Intensified discussion of the flight engineers' dispute (AVIATION WEEK, May 31) may lead to a split in the Air Line Pilots Assn. President Dave Behrke's next move may be to pull ALPA from the American Federation of Labor.

Previously, Behrke told the pilots that ALPA won't be pressured into backing down from its position on an organization of flight engineers. He said that AFL would a disaster to the flight engineers' international union "which is not" and is now in a position of being forced to back up the entire organizational structure.

Behrke claims the flight engineers were given CAB recognition simply as a result of ALPA's efforts, and that ALPA is on the right and will not be "betrayed."

If ALPA secedes from AFL, it probably won't happen until July 15, when ALPA's executive board holds its next meeting.

German Aid

Intert key testimony at the Air Force's proposed Air Engineering Development Center will be two experience and trends and an attitude towards the future of the industry. This testimony will be given by the German government, which would authorize \$150 million to start construction of the center. USAF will utilize a German design for a new speed wings concept not before the close of the war for the first time, and engage German designers. The equipment to be used in the test engine altitude chamber, was developed from the German High Altitude Wind Tunnel. This will be used in a conventional and relatively expensive manner in the immediate future for a test facility for jet and turbojet power plants.

"Argued Gen. David P. USAF director of research and development, told members of the Senate Armed Services Committee.

Budget Cuts

A move to trim down the coming year budgets of the armed services is underway in the Senate. Senate Appropriations Committee will start hearings on the new budget. Sen. Milford T. Tamm (D., Md.), chairman of the Armed Services Committee, plans to call for an overall reduction in the expenditure of 1961, which would amount to the House added to the Budget.

Senators estimate for overall program.

Johnson Reverses

Defense Secretary Louis Johnson has issued his personal judgment on the Air Secretary W. Stuart Symington in the situation of pilot's recognition.

Johnson officially took office as defense secretary, he made little use of his duties for Symington. Many Washington observers agreed that there would be a new Air Force secretary early in the Johnson regime at the Pentagon.

Now, however, Johnson finds he needs Symington to avoid his political losses on Capitol Hill. Johnson has announced the use of more Symington, particularly on the key Armed Services Committee, later than almost any other cabinet member in recent history. As a result he now finds it extremely difficult to do business on the Hill. Three times within the past month he has had his knowledge publicly exposed by the House Armed Services Committee.

In contrast, Symington has an increasingly good relation, not only with the Armed Services Committee, but also with the Democratic leadership, such as Speaker Sam Rayburn of the House and Sen. Lyndon Johnson in the Senate.

Secretary Johnson has been clothed at least a temporary truce with Symington to get the latter to fight for the Defense Department on Capitol Hill while a number of vital military policy bills and the fiscal 1961 appropriations bill are moving through the legislative mill.

There is no need to necessarily be applied to USAF Secretary of Defense Louis Johnson's answer that Symington is the Director of the Defense Department, and Symington is the Director of the Defense Department, and Symington is the Director of the Defense Department.

"It will be attacked with a saving of less than a billion for the next year," Tamm commented. "There is some doubt that it will be approved by the Senate."

by the House before summer adjournment.

Probe Maneuvers

Some fast political maneuvering was behind the sudden decision of Rep. Carl Albert (D., Cal.) chairman of the House Armed Services Committee to take over the investigation of U. S. Air Force B-36 program.

Backers of the probe originally tried to get either Vroom or Sen. Milford Tamm (D., Md.) chairman of the Senate Armed Services Committee to accept in handling the investigation. Both Vroom and Tamm indicated they were not in the idea and told Secretary Maza that neither committee would run the ball on the proposed investigation. Instead as the committee, Rep. James Van Zandt (R., Pa.), a Naval Reserve captain, took his knowledge from the House floor and demanding a special investigation committee to probe the B-36 situation.

Van Zandt's speech-based Vroom to reverse himself and take over the probe with his committee to block appointment of Van Zandt's requested special committee and special staff of investigators. Under Vroom's direction, the Democrats are about to make a more sober headline of the situation than with a special investigation committee, not justify its existence and expenditures with unusual diligence.

Jet Facts

British aviation publicists want thoroughly understood by British engineers at the recent IAS/RAE conference, during the course of which some of the actual facts regarding their gas turbine power plants were discussed. For example, G. R. Edwards, chief designer of Vickers-Armstrong Ltd. is quoted as the present overall picture of the Rolls-Royce engine in 1958 is the one of the deLaval-Gobin 100. This means with some of the higher figures published by the British in the past few years. Regarding engine, Edwards' figure also shows that the Cobin, Mass and Deere engines have a specific fuel consumption of 1.5 lb per hp per hr. This is not in actual service. The Mustang, Dart, Nene, and Cyclone engines have a specific fuel consumption of about 0.75 (under actual) flight conditions. These figures are also at variance with the published claims of "the most important" in the aircraft gas turbine field.

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NEWS DIGEST

DOMESTIC

Joint Chiefs of Staff told Defense Secretary Johnson that proposed B-56 vs B-52B interception test would not be conclusive. Johnson is advised by Col. Victor, whose House Armed Services Committee requested the test. JCS said it took that from security viewpoint, evolution tests of weapons and jet fighters now being made, should not be made public.

Canada-American negotiations for a new bilateral air agreement were not concluded, but officials and discussions will be resumed at an early date.

Part of New York Airfield officials Howard, Colman Joseph Bizar and Austin Tobin will meet June 5 with C. R. Smith, Jean Trappe and Eddie Ruckelshaus, representing eight airline leaders, to discuss retirement of the famous air space of New York International Airport (AIRMAN WEEK, May 27).

Helicopter air mail operations are to be inaugurated in the Chicago metropolitan area on July 25, by Helicopter Air Service Inc., Northfield, Ill.

Major General Hugh J. Kner, inspector general of the Air Force, was to be retired last week, for the second time. The first retirement was in 1939 for physical disability. He returned to active duty in 1942.

FINANCIAL

Street-Winner Corp. directors declared a 25-cent per share cash dividend on the 35 per cent common stock, payable on July 5, 1949, to stock owners at the close of business June 17, 1949.

FOREIGN

British Government has contacted with Gloster Aircraft Co., Ltd., for 28 standard Meteor four jet fighters for the Royal Air Force. British pilots and ground crews will be trained in Britain. Countdown is the latest in a series between Gloster and the British. One of the latest is the British. One of the latest is the British. One of the latest is the British.

British test pilot Joe Lancaster used his airplane test to escape injury when his 500 mph jet plane went out of control. It was the first time the operator met with an accident, for other test purposes.

INDUSTRY OBSERVER

National Advisory Committee for Aeronautics has developed a new research technique for producing wood bonded data at high Mach numbers in low densities—critical area in the high speed, high altitude requirements of the next generation of military aircraft. NACA now intends to produce a supersonic wood bonded coating by an electrical discharge to produce an airplane that can be photographed. This technique produces models similar to those obtained by models free in low speeds and Schlieren photographs at high speeds and high densities. Idea was suggested by Joseph Gagliardi of University of California and developed by NACA researchers at Langley and Ames.

Navy is working hard on extending range of its early warning radar for current use. Detectors have been used in radar systems but now Navy has a variety of aircraft equipped to perform the same function at greater range. Using new techniques, data from airborne search radar can be transmitted to the radar scope aboard a carrier at ranges up to 100 miles. Navy is also studying a number of B-17s and two Consolidated with electronic equipment to enable these planes to serve as airborne fighter control stations.

Navy is studying two light aircraft carriers (Coburn and Bataan) for special anti-submarine work. Modifications will be done at Philadelphia and San Francisco Naval Shipyards. Principal modifications will involve strengthening the flight deck and re-equipping the carriers to handle larger and heavier planes.

Eight Fairchild C-119B transports now on order by the Navy will be assigned to the Marine for experiments with airborne infantry and paratroopers. Navy acquisition for the C-119B is R4Q-1.

First case of nondestructive testing of propeller pitch in flight was reported recently by American Airlines. Pilot of a Commander had the propeller service pitch while on final approach at Newark. Scissors and landing gear switch were applied last propeller service pitch later during an approach to Washington. American is studying the case to determine if any basic modifications of propeller equipment are required.

Civil Aeronautics Administration has proposed a modification of all DC-4 and converted C-54 transport now before next September. Proposed modification, known as air service modification, would involve the new heater exhaust creating a possible fire hazard and causing smoke to enter cockpit. Modifications require a protective covering (shield) steel built over heater exhaust stack to prevent inflammable fluids from reaching the stack.

Convair-Learners may have their landing gear controls re-worked as a result of several inadvertent activations of the gear by airplane pilots. Proposed CAA order would require modifications to assure landing the landing gear activating handle in the cockpit even though pilots do not move the handle all the way into the locked position.

Proposed test program for the Landing Aid Experimental Station at Anacapa for 1949 by ocean will probably include test of runway lights, test of the slope line versus angle system using some intensity of lights, and test of two-way lighting systems.

G. S. Weather Bureau is preparing standard visibility modern to be placed at quarter mile intervals at airports where ILS and OCA have reduced weather minimums for landings. Airline pilots have been complaining about the wide discrepancies in Weather Bureau observations as airport visibility.

Pre American Alaska division has completed a comprehensive study of the problems of carbon deposits and smoke control in EC-4 cockpit. Results of the study ordered FAA to get CAA approval to waive the requirement for crew members and passengers to don oxygen masks when carbon deposits are released as fuelage runs.

AVIATION WEEK

June 6, 1949



Symington

Odium

Johnson

B-36 Procurement Investigation Slated

Johnson, Symington, Odium in middle of probe touched off by Van Zandt blast.

The Armed Forces Committee last week announced only voted "a sounding investigation into all phases of the B-36 bomber."

The resolution approved by the committee authorized \$75,000 for the public hearings, for a special counsel to direct it, and specifically calls for an analysis of "all facts relating to when that bomber was purchased, why it has been purchased, how it was purchased, any considerations of other aircraft procurement that may have resulted."

House passage is expected to be swift, but it will probably be at least a month before the investigating staff is assigned and hearings get underway.

Van Zandt Blast—The action followed a scorching speech on the House floor by Rep. James Van Zandt (R., Pa.), a captain in the Naval Reserve, regarding at the role that the political influence of Secretary of Defense Louis Johnson, former director of Consolidated Vultee Corp., and Floyd Odium, president of Atlas Corp., which controls Convair, played in Air Force procurement of the Convair B-36 bomber. Questions were also raised as to whether the political influence of Secretary for Air Stuart Symington figured

in an alleged \$30 million reorganization decision in favor of the Eastern Electric Co. of St. Louis.

Symington formerly was president of the firm that assisted his associates with a plan to purchase the government in 1945. Van Zandt said that reports that the government's original contract provided that defect correction costs on gun barrels were to be borne by Eastern Electric, but that under reorganization USAP awarded the contract to allocate the company loan loss.

The investigation was welcomed by both proponents of the B-36, anxious to see an opportunity to discredit Van Zandt's charges, and by its critics. Symington remembered "the allegations and manner...are obviously and demonstrably false. Even allegations and manner should be investigated, however, because by that process the truth will be revealed, as it should be. I welcome investigation in open hearing."

Following is the text of Van Zandt's accusations:

Ugly, dishonest reports are beginning to appear through the Congress and through Washington. They have come to me from New York and from other cities. I am

convinced that I am not the only member of Congress who has heard these reports.

I say that the accusations of this nature, the insinuations of what they are going to do, the signs and conditions with which they are covered, repeatedly demand that the Congress set up an impartial House committee to make a full and complete investigation.

"There are those who will say 'politics' at any suggestion. I say that politics with every suggestion possible, that there is any politics at all involved. My record on national defense topics for myself. I say, the year, here the record of both the Republicans and Democrats parties that when it came to the national defense and its international policy, politics was permanently abolished."

These disturbing reports—and to me they are only reports and they are completely untrue—arise from the statements of Mr. Symington and Mr. Johnson with Mr. Floyd Odium of the general Atlas Corp., a major holding company.

It is reported that Mr. Symington is a frequent weekend visitor at the Palm Springs, Cal., week house of Mr. Odium and his wife, the former Jacqueline Calhoun, that the highest of the "Dowling" plant, which Mr. Symington was at his personal service, will reveal state secrets to Palm Springs. This is said to be a selling agent's background at other facts it provides that he thought.

In 1947, the Consolidated Vultee Aircraft Corp. held contracts for 100 B-36 bombers. At that time there was considerable doubt as to whether the contracts would be fully satisfied. A meeting of the hearings on

the 1949 Air Force appropriations declines that in only 1945, it was actually planned to cut back these contracts.

The Air Force was asking instead for \$100 million in 1945. In 1944, Victor Eassey, who then controlled Convair through the Aviation Corp. (AVCO), consolidated with Consolidated to the Lockheed Aircraft Corp. The Securities and Exchange Commission would not register the sale.

Later in 1947, Mr. Odium, through Atlas, acquired control of Consolidated, and in some manner, a few months later, in January, the Air Force proposed a definite contract production of the B-36. Air Force studies in early 1948 indicated that the B-36 was not suitable and Gen. Louis H. Boardman, as advised by his associates, explaining that the contract for 100 would be cut back to 50 or 60 as so not to bring forward the cost.

In May, the Air Force announced that it would hold its 70 group three record of the B-36, the B-35, North American, F-80, North American, and others. This announcement on May 7, 1948, did not tell the General B-36.

On May 10, 1948, the B-36 had already been produced.

The Air Force in June cut production to 100 and maintained a further reduction to 50 B-36.

Mr. Louis Johnson was a director and at times for Consolidated Vultee at that time. During the same situation of April, May and June, 1948, an official investigation was begun of the various aircraft plant contracts of Eastern Electric Co. of St. Louis, a firm formerly headed by Mr. Boardman.

These aircraft contracts were unworkable, but the contracts between these people, that they were to be observed without cost to the government. Col. Frank White, of Wright Field, said to St. Louis and re-organized these contracts without loss to the company. It has been said that this

reorganization process and the government approximately \$30 million.

Eastern Electric was used from loss, the government obtained the benefit at a cost of \$100 million, the American in power refused. Colonel White, who was a subordinate of Gen. Boardman, is now retired and is said to be living in Beverly Hills, Calif. The same situation should be the object of the committee's inquiry.

A review in Consolidated Vultee-Air Corp. Although in the spring and summer of 1948 the Air Force planned to reduce available the B-36 contracts, we find that in January of 1949 it was ordering contracts with other companies for other planes in order to produce more B-36s which were many months before had been based on satisfactory in numbers and were to be used in replacing fighters. The reorganization of the consolidated contracts with other companies were handled by an outside law firm, reportedly upon the recommendation of Mr. Johnson. The firm had been retained at some time by Mr. Odium's Atlas Corp.

Throughout the aircraft industry there are reports of very serious considerations of the future of the industry. They are now planning to set up through Atlas a large aircraft company under the control of Mr. Odium. I have stated that since it is not possible that there is a plan under way for Mr. Symington to resign as Secretary of Air at some of the 1950 budget committee, which for the next B-36, approved and had that large aircraft company. I do not see that all of these reports are true, but I do emphatically insist that they are so product and so persistent as to require a congressional investigation.

The Congress should take this action as a final measure of the security of the United States. We have a duty to the Nation regardless of an individual in opposition. This duty we cannot shirk.

On Sept. 10, 1948, it was announced that the B-36 contract would not be cut

back to 61 aircraft but that the contract 74, which under contract would be supplied later, 26 Convair-Consolidated Vultee—Lester was produced and a \$100 million contract for modified training planes was awarded with the same company.

In October, the production of Northrop B-44 jet bombers was authorized from that time in Consolidated Vultee. The one month a Convair-Wright contract for F-87 all-weather fighters was awarded. A few weeks later, the \$750 million which was withdrawn from the Convair contract was transferred to Consolidated Vultee.

There have been repeated overruns only this year for other types of planes, all a matter of record, to make additional funds available for B-36. The outlays of other contracts involve \$101 million, a great sum. The end of the contract the original contract is being made by the lawyers. They will tell us the neighborhood of \$700 million. The money withdrawn from the contract will go, for the most part, to Floyd Odium's Consolidated Vultee Aircraft Corp.

After security the B-36 contract has been awarded and plans are going forward for the production of yet another 26 B-36. The Air Force has also brought back a plan to modify the 71 B-36 already on hand by the addition of jet engines for which the B-36 was not designed. The cost of the modification of the plane to bring it more in line with current developments that have been ordered is original design is more than \$25 million more, more than all the other planes except the B-36 in the first place.

James Symington at Dallas, the late Mr. Boardman, on basis of speculation in the handling of this plan, refused to appear at a very short time after Mr. Johnson was named as second Assistant Secretary of Defense, in part, to give the additional \$100 million contract to the Consolidated Vultee Aircraft Corp., a firm from which he had received in December and caused a few weeks later.



NEW VIEW OF OUTLASS

Latest flight photo of the elusive Wright-Curtis (DPTU) twin jet Navy fighter shows clearly the twin propeller version. See

boarded military along the spine of rock wing. Experienced models of the Curtiss are still in the final stages of flight testing.

but Chance Vought plant at Dallas is fabricating parts for production of an aerial order of 19 F7U for the Navy.

IAS-RaEs Meet

Differing approaches of Americans, British to aircraft problems seen.

The Second International Conference of the Royal Aeronautical Society and the Institute of the Aeronautical Sciences recently in New York City provided an important exchange of aeronautical knowledge. It also furnished by example the differences between British and American approaches to technical problems.

It has long been clear that the American approach is first to establish a rigorous theory supported by basic concepts, followed by a building to invention of a finished article. This produces a solid technological progress with a subsequent "cutting-edge" development phase.

The more conservative British approach follows empirical laboratory investigation of a specific configuration, followed by a costly series of operational models which ultimately produce a finished product ready for service.

Americans take the first and third steps, the British supply the intermediate step two. This pattern not adopted to last week's conference program. Technical papers generally were paired, or presented in pairs with English and U. S. authors interspersed.

► Turbulence—The turbulence panel placed center in its reported proceedings, with the British able to support their enthusiasm by reference to a variety of types that have completed several hundred hours' flight tests.

The stance of noise and vibration was shared by F. M. Owen, Bristol, and C. K. Edwards, Vickers-Armstrong, but both admitted that both consumption is a prime development problem. Both expressed optimism on this score.

Flight time does not yet permit an assessment of overhaul periods for maintenance on both surface and engine but proved substantially lower than with the corresponding engine.

► Materials—The materials problem was thoroughly handled from both the static and dynamic load point-of-view. A. R. Bennett, Bristol, favored a conservative approach in which each aircraft design requires special consideration, whereas G. G. Green, General, pointed out that such needs are already in G. G. design.

P. J. York, Vickers-Armstrong, introduced a new concept of the effect of high altitude on aircraft materials, pointing out that reduced atmospheric pressure, temperature, and water content has an effect on the chemical and physical properties of materials that can no longer be ignored. Together with C. Williams, Bristol, all agreed the high temperature problem is increasingly serious and unsolved data on materials is available for their use in aerospace aircraft design.

► Aerodynamics—Aerodynamically ground further prominence at the conference

when it cut across most of the papers presented. Its various presentations were specifically discussed by A. Flac, Cornell, H. A. Wolf, Armstrong, and G. G. Green. All agreed that the recentral emphasis required to handle these dynamic loads extend structural efficiency practices.

The close three-way debate over accessory system methods served British engineers but did not solve the argument over the separate merits of hydraulic, electric and pneumatic systems. H. C. Conway, Bristol Motor (Bristol); R. H. Woodell, Bristol (Bristol); and H. R. Harts, Bristol (Bristol), agreed that auxiliary power and accessory drive systems must be integrated into the original design of the airplane if efficient use of total power generated by the engine is to be possible.

► U. S. Role—Thematic atmosphere (all) fully to the American contributors with F. L. Thompson and W. G. Vancura, both of NACA, presenting research results. The large new land-driven flying boat debate was handled by D. Kork-Lewis, South West, and C. S. Schaefer, Boeing, with the presentation of the latest data on the efficiency of economic superiority of the flying boat and performance superiority of the landplane.

Philadelphia Regatta Draws Many Entries

Seventy-two planes and 142 pilots and aeroplanes competed over the 271 on course at Philadelphia in the annual Memorial Day Regatta for post pilot planes.

A new demand for plotting efficiency was seen. Devoted by George Fox, president of the Philadelphia American Country Club, Wing Field, Ambler, Pa., where the race was run, a given equal weight to fuel economy and time consumed in covering course. It is expected to result in a more realistic design, reduction of each plane's best normal cruising speed and fuel consumption.

Winning pilots in the same classes of planes, with their average speed and fuel consumption follow (according to preliminary Aircraft Owners & Pilots Association calculations): Best Bonanza, 136 mph, 6.5 gph; Pratt-Cut, Jr., Bess Noyes, 141 mph, 9.9 gph; B. H. Buehler; Bellanca Crusier, 127 mph, 5.5 gph; J. W. Smith; Cessna 130-140, 135 mph, 5.6 gph; Paul Mitchell; Beechcraft, 115 mph, 4.9 gph; Moxy Kinsky; Cessna 170, 125 mph, 7.3 gph; Kolb Swift; Piper Cub, 115 mph, 6.7 gph; Arthur V. Turner; Stearns, 117.5 mph, 8.8 gph; J. T. McArthur; Beechcraft, 117.5 mph, 8.4 gph; Arthur Colby.

ANDB To Test Omni-Range

Program is result of too large error in CAA equipment in Indianapolis installation.

Comprehensive tests and evaluation of the Omni-Range system system installed by Civil Aeronautics Administration will be made by the Air Navigation Development Board.

The ANDB test program is a result of an initial test of CAA omni-range equipment at Indianapolis which indicated considerable range of error in the equipment then CAA had previously published ANDB indicated that more extensive and more accurately measured tests of the main range and its supplementary equipment were required.

► Five Month Test—The omni-range system will take five months. Engineering supervision will be made by Airborne Instruments Laboratory, Mineola, N. Y., under contract to ANDB. Air Force, Navy, Air Transport Union, Air Line Pilot Association, Aircraft Owners and Pilots Association and the CAA have been asked by ANDB to participate in the program.

Initial ANDB test was made in the test house around Indianapolis. Test results will be made in metropolitan areas near Dayton, Ohio, and Philadelphia, Pa., and over a water area at Patuxent River, Md. It is believed these tests will indicate the effect of various types of terrain on the accuracy of omni-range.

In addition to the very high frequency omni-directional range, the automatic effect course computer and distance measuring equipment will be tested.

► Variety of Flares—A variety of aircraft types will be used including military, transport and general purpose. ACOFA will furnish a general class equipped with light-weight VFR navigation equipment for service testing. Special distance techniques will be used to the basic measuring device for flight tests.

Results of the tests will be published by ANDB and can be obtained by position net on the ANDB website by writing: ANDB Executive Secretary, Room 1115 Commerce Building, Washington 25, D. C.

► Correct Contract—ANDB has also awarded a contract to General Aeronautical Laboratories for development studies on the airport time reduction equipment recommended in 80-31 report of the Radio Technical Commission for Aeronautics. The Council study will indicate various general approaches to this equipment, problems and recommended specific techniques for development of prototype equipment.

Airport time reduction equipment is expected to perform the following functions: transmit aircraft flight plans from point of origin to destination, to base departure, and schedule all arrival times at any given terminal, and stage definite landing times for all arrivals. It is hoped that maximum airport utilization regardless of weather conditions will be made possible by this equipment.

CAB Airfreight Decision Fought

Opponent's of CAB's annual tentative decision outlining four all-range lines (Aviation Week, May 5) will make their last effort to upset it June 15, when the Board hears and arguments on "temporary" to the system.

In opposing court arguments, the Air Transport Union, charged CAB plans to launch an experimental (airfreight) program "which had no to seek among the most serious problems in the history of government regulation of private industry."

Moreover, water, wholesale duplication of facilities and services is expected to be added if the decision is made June 15 at proposed, ATA declared.

► Distant Problem—American Airlines, United Air Lines, TWA, Eastern Air Lines and six smaller certified carriers

are against CAB's annual tentative decision outlining four all-range lines (Aviation Week, May 5) will make their last effort to upset it June 15, when the Board hears and arguments on "temporary" to the system.

Freight rates, passenger fares and mail pay off will be higher if the four all-range lines are finally confirmed, American asserted. "Some of the rates where the CAB majority proposes to add new carriers would not generate sufficient traffic to support a single [daily] all-range schedule by such carriers which certified ones if the freight volume increases ten-fold as the board predicts," ATA said.

► Potential Disputes—Detroit, Eastern, American and other ATA members contended that CAB's estimate of a domestic airfreight potential of one billion tons annually at some undesignated time in the future is erroneous and misleading.

ATA, and that if the rate of increase in airfreight traffic during the postwar period were projected it would mean only 200 million tons annually in 1950 and 380 million in 1975. "A quarter of the potential cited by CAB" (Volume last year was between 716 and 125 million tons annually).

Several of the established airlines claimed the Board's contention that the all-range operation has shown promise in reducing their deficits. They said that such airlines was able to cut its loss last year only because the freight contract's supply and demand division had made \$562,500 net profit on \$1,400,000 worth of C-46 modification work performed by the Chinese and USAF.



NEW ALLISON TURBOPROP

First photo of the Allison T-40 turboprop aircraft in the world at a modified F-17 for initial flight testing at a modified F-17. The T-40 is a single use of the T-40 turboprop engine used in 1948 by the Navy power wing in place for the production version of the (Aviation Week, May 24)

T-40: T-40 is scheduled for use on the General F-17 flying boat, the Douglas A-1H, and North American A-1H, both Navy attack bombers, and possibly on a new version of the General A-1H, International bomber (Aviation Week, May 24)



PIASECKI'S FAST START

Usual flight pattern a P-400 B-24 transport biplane, is a fast start from a standard carrier deck during a Marine Corps demonstration at Quantico, Va. The

Marine are experimenting with the use of transport type biplanes for attack land-based aircraft carrier against enemy beachheads.

Court Averts Mail Award Chaos

TWA and Capital turned down on action to force CAB to revise past permanent rate determinations.

Receiving little attention but of substantial significance to the airlines were recent actions of the U. S. Supreme Court upholding Civil Aeronautics Board decisions on reopening past mail rate determinations.

TWA and Capital had both sought to reverse CAB decisions and to have a new mail rate established for a period in which a final rate previously fixed was accepted and in effect.

TWA sought additional mail pay of about \$11,172,000 for the period Jan. 1, 1946 to March 14, 1947. Capital requested approximately \$5,180,000 in additional mail compensation for the period from June 1, 1947 to Jan. 17, 1947. Both petitions sought relief to assure a profit on the movement for the periods involved to offset heavy deficits incurred due to normal and extraordinary events.

■ **Court Action.** After examining the various procedural steps below CAB at which their claims were denied, TWA and Capital separately took their cases to the courts. Petitions for review of the CAB orders were first sought in the U. S. Circuit Court of Appeals in Washington, D. C.

The Board was upheld in these actions and the courts merely affirmed the U. S. Supreme Court. Recently, the highest court of the land again gave its final ruling in favor of the CAB in this case, thus putting the Board in final denouement TWA's appeal and later Capital's similar petition.

While neither airline has been a solid day in controversy to cite numerous able cases and argue the final points of law involved past and on, the economic implications are clear-cut and far less desirable.

■ **Inevitable Inadequacy.** The power to revise permanent mail rates retroactively is a double-edged sword. If TWA and Capital had prevailed, they would have benefited handsomely, but a definite rate of contribution, however in claim, would have been introduced for the industry as a whole.

No assurance could ever be attached to past financial accounts. Also, the Post Office's budget would be a constant state of confusion for mail and finance periods. This retroactivity and uncertainty could disturb bank more than the view-to-the commitment of the Civil Aeronautics Act of 1938.

In its decision of Dec. 2, 1947, which

reversed its final action leading to the court appeals, CAB decided that "we do not have the authority to fix a new rate for an operation during a period in which a final rate previously fixed by us was in effect and such length of continuation of a mail rate proceeding."

■ **Future, Not Past.**—This Board further declared "It is firmly established law that a public utility rate shall only with the future. It is not concerned with the reimbursement of past profits which have passed. It offers only an opportunity to earn a fair return, and it does not guarantee that such a return will, in fact, be earned."

Nowhere in that decision does the Board refer to the consequences of its March 12, 1947, action when it sought to effect a retroactive reduction in mail pay for American Airlines. The Board then declared one of its basic mental decisions to be that it has the power to restore lower mail rates of factors to the time when notice is served that a rate investigation will be made.

Initially, this doctrine has never been departed. The dramatic impact of this decision was that it went back to Dec. 1, 1938, and was 15 months in the making.

The consequences were far-reaching and the market price of American's stock fell sharply, with corresponding weakness in other airline securities. One prominent investment bank dumped its holding in American Airlines shares on a dramatic market.

■ **Reverted.**—A few months later, in passing upon mail rates for Pan American, the Board completely reversed course on this issue. It declared that retroactive revision "would be all the more inducement incentive to accomplish increased economies in operation . . . such a policy creates a question mark across the carrier's financial picture which purport to reflect its true financial condition; for each statement, upon which investors may have relied, was subsequently to be reversed, creating a retroactive order of the Board. To the extent that such incidents create uncertainty as to the carrier's financial stability they tend to impair its ability to attract capital."

With this declaration, the Board in large measure, required the change

of its past action. Slowly, investor confidence was restored to the industry.

The lessons of the 1942 experience are too clear to invite a repetition of chaos thru the establishment of retroactive adjustments of mail rates.

■ **Adaptive Production.**—to the aircraft airlines who may feel the need of and seek additional mail pay amounts in the right to file an application to the effect. Any additional mail pay to be subsequently granted can then be made retroactive to the date of filing.

■ **Existing Procedure.**—Virtually every airline has resorted to this procedure in recent years when the approach has been made, the increased rate of mail pay established has been delayed or refused to the date of filing. The full amount of the increased rate of mail pay has usually been received but the retroactive principle, in this instance, has been consistently followed.

Accordingly, the failure to file in plenty of time can prove costly. For example, among the "Big Four," American, which has made a fetish of cashing its tickets, was the only carrier failing to apply for increased mail pay in recent years. In an April 7, 1948, show state order in the "Big Four," American's new rate was declared effective from the date of the order while the other applicants' increased rates were declared retroactive to Jan. 1, 1948.

While these applicants had filed prior to that date, the Board merely found that these carriers did not require any additional mail pay for such past period. Nevertheless, nothing was done to upset the principle of delayed retroactive mail pay awards effective from the date of filing.

By having previous applications on file, unless a mail "audit" for each added mail pay month, an carrier can consider one of their best safeguards. At present, there is considerable criticism being leveled at the industry for its tendency to operate on a "cash-plan" basis, with the difference being supplied by the government.

■ **Workload.**—Another costly danger to the practice is possible in the undue burden of the workload placed on the Board. For example, in recent mail Board awarded a mail rate increase on its domestic routes late in 1948, that it made payments and find for its other increase. This is hardly analogous to an under-represented and over-worked staff struggling to complete previously pending applications of other carriers in greater need of mail pay relief.

Presently, there is too much air space placed on efforts and resources designed to obtain additional authorities from the government. Filing applications for added mail pay, of course, requires the simplest and easiest access to this direction.

—Sally Albrecht



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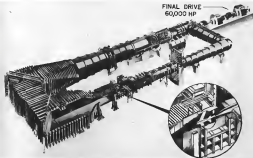
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ENGINEERING



Construction of NACA's 4-ft supersonic wind tunnel at Langley Aeronautical Laboratory, with test section in view. During year it has operated, power has been supplied by a 6000 hp motor providing installation of motor capacity of 40,000 hp for 70 minutes.

New Research Methods Revealed

NACA tells how better techniques, more efficient use of facilities have brought great progress in its transonic speed investigations.

Increasingly fertile new research techniques used by the National Advisory Committee for Aeronautics have brought forth a significant group of data revealing great progress in problems of the transonic speed regime.

Some of these procedures were initiated as late as V-2 Day. By carefully developing them, and employing related, yet more accurate instrumentation, NACA has been able to extract greater quantities of useful data per hour of tunnel time, model flight, and body lift.

Therewithal work has followed closely those research results so that theory and test design progress is available more quickly than formerly. It has answered the aerodynamician's quest.

At the industry's general inspection of NACA's Langley Aeronautical Laboratory (November 1959, May 30) some of this progress was reported.

►Boundary Layer Control—Boundary layer control investigation now indicates

that its effectiveness is greatest in increasing the optimum aspect ratio for a wing of given area. Boundary layer control plays a major role in aircraft range, boundary layer control can be effective in reducing drag over thick root sections (up to 40 percent) required for aspect ratios as high as 20.

No solution is yet in sight for the critical sensor and measurement difficulties presented by extremely smooth surfaces and sensitive slot design required.

►Rocket Applications—Various aircraft research stations, at Wallops Island, Va., has made progress in applications of the rocket to aerodynamic research. The problem of stable booster/body separation in flight has been solved so that rocket body stability is now virtually unaffected by separation of the spent booster.

Free surface confinement is simple lift, drag and moment data, the rocket technique has now been extended to such complex research applications as

lifted-control effectiveness, dragging air, aerobically, static, stability, dynamic stability, flying qualities and none pertaining to pilot escape.

The technique has now been reduced to such dependability and accuracy that as many as seven parameters may be obtained from a single flight which, in turn, provide wholly adequate data for the configuration under test. Then, only one or two flights suffice for complete tests of a new configuration problem.

The importance of the rocket technique lies in its production of data smoothly through the sub, trans and supersonic speed regimes.

►Jettable Nose—One of the results of this program, with immediate application is the fact that a jettable nose can be separated from a high-speed aircraft only when the drag of the body is greater than the nose portion, requiring the need for separation of the body (below separation).

(Continued on following page)

Substantiation of the same is also in accord with present thinking and conventional pilot escape difficulty and thus may require special flat along the introduction of the issue.

An idea continues an important position, with the "single shock" response, not only exhibiting superiority over the familiar "multiple shock" design. In the transonic zone, high critical speed continues a primary objective, but that must be obtained without a sacrifice in inlet velocity rate. Detailed design data are now available for selection of the proper nose inlet shape to meet these conditions.

NACA is now examining a new type fuselage inlet consisting of a tapered reduction along the leading edge and a simple external nose wing within the leading edge line. This new form is expected to prove superior to the conventional ramp NACA fuselage inlet.

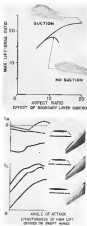
New-Type Automatic Pilot—The "intuitive" gyro automatic pilot is now being proposed as a solution to dynamically unstable aircraft configurations in which added fuselage, transonic angle reduction or dihedral angle reduction have proved ineffective in reducing the time delay between use of the auto-thermostat. This new-type automatic pilot is sensitive only to the rate of change of rotation about the axis and not to the angular deviation alone.

The device has proved highly effective in damping unstable oscillations but it is not yet known to what extent the various will permit this device to fulfill the control requirements for dynamic stability.

Supersonic Compression—Development work on the NACA supersonic compressor has continued, with the business section further now giving way to a new supersonic turbine design with great promise. In the latter design the flow expansion is pressure rise through the rotor but achieves its compression through the formation of a normal shock in the stator passage downstream.

Flow efficiency of this new design depends upon the characteristics of the air through the turbine, extreme research will be required to determine the best turbine angle and blade shape for both the rotor and the stator. But the earliest weight savings are guaranteed by the reduction in blade size from 6-12 stages to only a single stage for a given pressure ratio.

Aerobically was revealed as a new and comparatively minor encouraging a new variety of dynamic and wing dynamic phenomena. That it should only now be coming into prominence stems from the fact that it increases in importance with speed, and NACA aerodynamic research is now almost wholly in the transonic zone, where aerodynamic problems are most severe.



The estimated phenomena of flutter, divergence, control reversal and loss of control are encountered in the transonic zone for a straight-wing aircraft but occur over a wide range of speeds for various swept wing configurations. Research already indicates that wing divergence is the most critical aerodynamic problem for swept-wing aircraft but for swept-back wings aerodynamic center shift for all highly swept wings and flutter for swept-back wings. Mathematical methods are already available for the prediction of whether

strength is sufficient to be critical in a given design.

Combined Load Testing Machine—The new NACA non-compressible combined load testing machine was unveiled at the meeting. This unit permits the application of combined bending-torsion loads on a structure at three degrees of freedom. In addition, the unit controls loading equipment permitting loading of structures at high temperatures.

The unit has already carried structural research into new areas of combined load tests and has provided new data on maintainable data on stress-strain properties in combined compression and shear beyond the elastic range of the material. These data have permitted the development of a new "slip" theory of plasticity which follows experimental results more closely than previously.

Spot tunnel research during recent months has established the dependence of spin characteristics on basic geometry. Whereas chute instability in the past has rendered difficult the problem of accurate determination of chute flow strength new methods that measure the pressure of the chute before and after a stable chute of much smaller size than those formerly required. A theory is now available in which the magnitude of the spin moment can be used as an criterion in the assessment of the roll damping power factor of experimental models.

Supersonic Pressure Tunnel—Collection of the Langley 4 ft. supersonic pressure tunnel, which has occupied its first year of operation, has now been completed and research is now under way on models as large as 12 in. size at Mach numbers between 1.2 and 2.2. The tunnel is temporarily powered by a 6000 hp motor in order to complete calibration while waiting installation of the designed 45,000 hp motor, which can provide 50,000 hp for periods limited to 30 sec. Provisional installation of the tunnel up to 2.5 times atmospheric pressure enables the equipment to produce high Reynolds number results, comparable to full-scale supersonic flight.

An important research result revealed at the 1949 symposium was the practicality of propellers operating at supersonic speeds.

Research results in the 4 ft. high speed tunnel of the past year indicate that useful efficiencies are now predicted for conventional aircraft propellers operating at speeds up to Mach number 1.1 in the absence of the adverse effects believed that the propeller was subject for flight above Mach number 0.85. In addition, special supersonic blade profiles are now under test that may permit the operation of propellers driven aircraft and aviation will use the super sonic speed zone.

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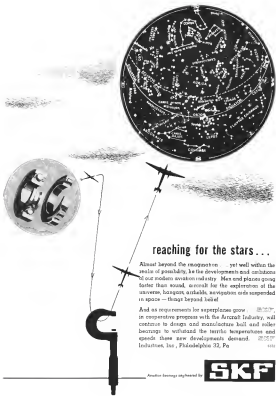
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Most widely known method is use of an adjustable tail pipe nozzle, either a "jet" or "jet" within the tail pipe, or otherwise closed doors. This method shows important advantages theoretically. But mechanical difficulties have placed considerable limitations on the high-temperature in which the mechanism must operate.

Another method, suffering from the same difficulties, but likewise, is



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Partial Admission Aids Efficiency

Blocking of nozzle annulus offers method to slow jet engine speed without taking fuel consumption penalty.

By Robert McLean

One of the major performance differences between the turbojet and reciprocating engine is the engine speeds for best economy. The reciprocating engine attains its lowest specific fuel consumption at 50-65 percent of its maximum engine speed, but the turbojet must operate at 90-95 percent maximum speed for maximum fuel economy.

As one more method difference lies in the effects of engine speed changes on specific fuel economy. While during throttling of the reciprocating engine makes little or no change in its economy, a throttling of the turbojet engine actually causes a serious increase in fuel consumption.

Nevertheless, for purposes of engine speed control, the turbojet engine must be throttled, for example, on fuel approach to a runway or on take-off. When to Slow Down—Reduction in engine speed may also be desired when a fighter aircraft is loitering, flies formation with other jet fighters, slows down in maneuvering, or when its engine speed is insufficient to maintain requirements.

These reductions in engine speed are made by reducing engine thrust, which can only be accomplished at present by reduction in engine rpm.

When such throttling occurs, fuel consumption increases rapidly (Fig. 1). For example, a typical present-day turbojet engine operates at 12 percent maximum engine speed at which it develops about 95 percent static thrust. A reduction in engine speed of only 30 percent results in a reduction in engine thrust of 58 percent, but an increase in fuel consumption of 12 percent. This phenomenon comprises one of the basic problems of the turbojet engine in flexibility.

Wanted: Flexibility—Attempts to provide increased flexibility to the turbojet engine have been numerous. But all have been based on the constancy of engine rpm for maximum fuel economy, while reducing the thrust to mechanical means.

Most widely known method is use of an adjustable tail pipe nozzle, either a "jet" or "jet" within the tail pipe, or otherwise closed doors. This method shows important advantages theoretically. But mechanical difficulties have placed considerable limitations on the high-temperature in which the mechanism must operate.

Another method, suffering from the same difficulties, but likewise, is

the use of adjustable static blades in the turbine nozzle annulus.

A third method of considerable promise, and yet not subject to the high limit of the first two, is the use of adjustable static blades in the compressor. By changing the blade angle, this solves the problem of maximum fuel consumption caused by reduced engine speed. The blade angle of attack is changed and produces optimum lift coefficients at the existing airspeed and static pressure.

In tests of an NACA eight-stage axial flow compressor in which the static blades were turned through angles as great as 16 deg., results indicate substantial improvement in peak efficiency and peak pressure ratio for the compressor.

Again, however, the design of the complete mechanism required for adjustable static blades, together with accompanying automatic control, is a substantial task under present conditions.

Better Way—A simpler and more effective method of reducing engine thrust, while holding engine speed substantially constant, is "partial admission." Portions of the nozzle annulus are blocked off mechanically so that the flow of hot gases from the diffuser into the burner chamber does not reach the turbine.

In the alternate form of partial admission, the firing of the affected combustion chambers would be shut down. The turbine would be operated on only a few of the combustion chambers, of holding unoperated fuel injectors.

In order to determine the actual performance and efficiency of a gas turbine operating under partial admission, the NACA Lewis Flight Propulsion Laboratory tested a typical turbine

modified to control the turbine inlet gas flow to 120 and 150 deg. of the nozzle annulus.

At 120 deg. admission, turbine performance was obtained for three values of total pressure ratio, a range of nozzle inlet pressure from 30 to 45 in. Hg abs., an inlet temperature of 500 K, and an inlet velocity of 500 ft/sec, including design speed. At 150 deg. admission, turbine performance was obtained at a total pressure ratio of 2.0, an inlet pressure of 45 in. Hg abs., and an inlet temperature of 500 K, over the complete range of inlet speeds.

Fig. 2 is a typical curve resulting from these tests, and is a plot of overall turbine efficiency against the percentage of full power output at an inlet total pressure of 45 in. Hg abs., inlet total temperature of 500 K, a rotor speed of 5650 rpm, and a total pressure ratio of 2.0. Although only the 120, 150 and 160 deg. admission conditions were used in the tests, the remainder of the points were calculated by standard performance interpolation methods in use at the laboratory.

Test Results—These curves show, first, the effectiveness of partial admission as a direct power control with power not dropping almost linearly with the degree of admission down to 150 deg., after which the effectiveness falls off. Second, this power reduction is obtained at a proportionately low cost (increased fuel consumption) in overall turbine efficiency.

When direct engine throttling of 10 percent power causes fuel consumption 20 percent, with partial admission the same engine power reduction can be obtained with a loss in efficiency of only 4 percent under the conditions used in the test.

Efficiency Losses—Since the ideal goal of partial admission is to control engine power without any losses in overall turbine efficiency, the first consideration is the losses of the lower down. First, an analysis was made of the turbine operated under design conditions at full 160 deg. admission and this static condition that about 18 hp was lost through rotor tip leakage and 7 hp through bearing loss.

Leakage of the gases through the clearance between the rotor tip and the turbine casing is constant regardless of engine speed or degree of admission, so it was decreased as a basis of comparison. The bearing loss due to friction, as indicated by a heat rate of the lubricant versus the 1.4 in. area of the rotor seal, is independent of the degree of admission. So it, too, can be decreased.

But partial admission under additional losses:

- Pumping or leakage loss in inactive rotor blades.
- Scraming and eddy losses during 90



Fig. 1 Percent maximum engine speed vs. Percent maximum engine thrust for turbine and reciprocating engines

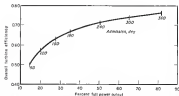


Fig. 2 Variation of overall efficiency with power addition by partial admission (Ref. 2)

ing and twisting of rotor blades.

• **Losses of gas at nozzle discharge.** These latter two losses are combined into a single drying-thrust loss.

• **Degree of flow-pumping loss** increases with rotor speed and with decrease in degree of admission. The loss varies in the third power of the rotor speed and its magnitude is determined largely by the peripheral diameter of the turbine area it varies as the fourth power of the latter.

Major effects in partial admission efficiency loss are the drying-thrust losses, which are directly proportional to rotor speed and vary directly with the degree of restriction of the nozzle assembly.

The nozzle and rotor blade losses, common to both full and partial admission, are at a maximum at the design speed of the rotor. They increase with either an increase or decrease in rotor rpm.

In the case of partial admission, these losses vary with the degree of admission. Although they are the greatest source of power loss in the full admission turbine, they become of less importance in partial admission because of the rapidly increasing drying-thrust losses.

► **Efficiency—Partial admission** long has been used in the steam turbine field. This experience now can be drawn upon to indicate methods of reducing efficiency losses due to partial admission.

Steam turbine practice indicates that pumping losses may be reduced by closely clamping the reaction rotor blades. Such clamping also reduces that part of the drying-thrust loss caused by induced gas diffusion at the nozzle discharge.

• It decreases the pressure gradient between the active and inactive flow regions of the blades.

• It minimizes the flow of the diffused gas through the inactive rotor blades and the consequent power loss.

One problem peculiar to partial admission is subjects the rotor blades to

induced vibrations in addition to those caused in full admission operation. Primary resonance occurs at partial admission when the forced vibration set up by the application and release of the drying-thrust loss at the beginning and the end of each blade has the same period as a natural vibration frequency.

One in seven operating conditions will always exist during partial admission operation at which the timing of the loading and unloading of the blades will be such as to cause primary resonance. Precautions must be taken in the design of the rotor blades so that under conditions of primary resonance the maximum blade stresses induced may be withstood safely.

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4. R. L. Baker, Jr., *Engine, Journal of the American Society of Mechanical Engineers*, Vol. 58, No. 1, May, 1944.

Small Unit Reveals Atmosphere Secrets

A tiny telemetering device capable of continuously transmitting 24 different types of information by radio from rockets traveling almost 1000 mph, has been successfully tested by Navy scientists at White Sands, N. M., according to Central Air Documents Office (Navy Air Force) Technical Data Dept.

Installed in the "Arrow" rocket, the instrument, weighing only a few pounds, transmitted information at 71.73 m above the earth at a maximum velocity of 2830 mph. Recording instruments on the ground were able to receive data on flight characteristics, atmospheric conditions, rocket performance, quality of sunlight above atmosphere blackout.

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• In the United States air transportation is operated as a private enterprise. In other countries it is conducted by the government. The United States continues to lead, as it always has, in the development and utilization of air transportation. No other country has a comparable standard of airline service. We believe it is in the nation's interest, as well as to our own, to continue to operate under the system that made this possible.

If, however, private enterprise is to retain the spirit and initiative which makes for progress, it must be convinced that its service is useful and that results are largely dependent on its own effort. A result of our effort is:

In three years, 1946, 1947 and 1948, American Airlines, Inc. invested \$60,000,000 in new airplanes and equipment:

This provided business for the aircraft factories and employment for their men, strengthening their ability to contribute to national air power.

It provided one hundred twenty-five airplanes of the most modern design—the largest single fleet of modern transport aircraft in the world, and a direct contribution to national air power.

It provided a new 300-mile-an-hour fleet for the air routes of the United States, assuring time-saving, dependability and safety—more comfort for the passenger and greater speed for all forms of travel, transportation and communication.

In the same three years, American Airlines, Inc. invested \$6,000,000 in new and more efficient shop buildings and equipment:

This has provided jobs for trained technicians and modern machinery for their use.

It, thereby, provides an important reserve of skilled personnel available for national air power.

It has provided operating economies which will be reflected in contribution to profitable operation and, ultimately to reduction in charges for air transportation.

It has provided maintenance and overhaul facilities, strategically located, which constitute a reserve for national air power.

Every dollar of the \$66,000,000 came from private investors. None of it was borrowed from any agency of the government nor was any of it government subsidy.



AMERICAN AIRLINES INC.



What Air Mail Subsidy?

A common misconception is that all of the airlines are supported by government subsidy. Let's discuss this:

American Airlines is paid for the transportation of mail at rates established by order of the Civil Aeronautics Board. The rate at which American is being paid was certified by the Board to be "fair and reasonable in terms of quality of service and was not designed to meet the financial needs of the carrier." That rate includes no subsidy.

The United States Post Office Department is American Airlines' largest customer in dollar volume, and we continue to give it the best of service.

It should be remembered also that we transport passengers, express and freight. In 1948, our revenue from those sources was \$84,615,000. Our total revenue for the transportation of mail was \$4,769,000.

Of the total revenue of American Airlines in 1948 more than ninety-four per cent (94%) came from the transportation of passengers, express and freight. Less than six per cent (6%) came from the transportation of mail.

If, during 1948, the total revenues received for the transportation of mail, \$4,769,000, had been the only funds available to meet our expenses we would have been able to operate only 19 days during the year. We did operate 365 days.

American Airlines is a business institution. We take pride in the fact that we have been able to make substantial progress and improvement, with private capital successfully employed in the public's service.



AMERICAN AIRLINES INC.

YOU NEED A BUILDING?

Meet your Problems of Space, Production or Storage by using TRUSCON Standardized Steel Buildings.

YOU NEED IT WHEN?

Prompt delivery of TRUSCON Standardized Steel Buildings within certain size limitations is now possible.

YOU NEED IT WHERE?

These standard-unit, pre-fabricated structures can be shipped anywhere, are easily and speedily erected and dismantled, allowing extreme flexibility.



Truscon Standardized Steel Buildings are now available in seven A design of widths not exceeding 30 feet, in lengths up to 14 feet 10 inches and are built in modules of 4 feet. Steel can be either steel reinforcing type or Formlock Reinforced with insulation and waterproofing. These Truscon Steel Buildings are used for all kinds of industrial and commercial structures because they offer the economy, permanence, ease and speed of erection, low upkeep, low cost, high investment value. And Truscon Steel Buildings have a high salvage value which permits them to be dismantled and removed in an entirely new location.

Write for complete information today. Truscon engineers will be glad to make suggestions and help you select the building that fits your needs.



Series "A"—Type 1

Standard Widths of Buildings	
H	W
8' 1 1/2", 10' 0", 12' 0", 14' 0", 16' 0", 20' 0"	8' 0", 10' 0", 12' 0", 14' 0", 16' 0", 20' 0", 24' 0", 28' 0", 30' 0"

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Manufacturers of a Complete Line of Steel Windows and Standard Openings • Industrial Steel Cases • Steel Gates • Metal Lath • Complete Steel Buildings • Reinforced Walls • Reinforcing Steel • Radio Towers • Steel Bases and Platforms • Foundry Tables

Chart Eases Selection of Resistance Gage

Graph method affords rapid choice of strain unit and determination of output. Example of application cited.

A time-saving chart has been devised by G. L. Rogers, McDonnell Aircraft Corp. chief test engineer, to ease the difficult problem of selecting a bonded electric strain gage for a specific installation.

Just how perplexing this selection can become is pointed up by the fact that principal manufacturers of these gages—Edwards-Southwick, Locomotive Works—catalogs approximately 55 single-direction SR-4 units (exclusive of special gages), with varying dimensions, in

surface and gage factors for individual units.

Basic considerations in choosing a strain gage for a particular installation involve space limitations, gage output, gage resistance, or a combination of any of these factors.

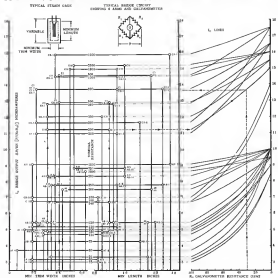
Factor Considered—In the accompanying capacity chart, subjects of the various SR-4 strain gages are plotted directly as a function of minimum width and length. It is therefore possible to choose one gage, or some in-

stances more than one, that will fulfill the dimensional limitations at various bridge output values.

If the criterion is bridge output, it is a simple matter of inspection to choose that gage standing highest on the chart, signifier of dimensional characteristics in gage resistance.

In many applications the bridge circuit warrants a reasonably small output. Again, by inspection of the chart, it is possible to choose the gage whose resistance is adequate and still fulfills other qualifications.

In choosing these procedures, it is possible to choose the gage with the desired minimum dimensions and mini-



Symbols

A_1/A_2 = Two ratios, in %
 E = Young's modulus, lb./sq. in.
 R = Radius of all parts, shown. Subscripts denote separate parts.
 ΔR = Change in resistance of one gage, ohms
 P = Potential applied to bridge, ohms
 R_1 = Resistance of galvanometer, ohms
 R_2 = Bridge output, microvolts
 L = Bridge output, microvolts
 K = Gage factor = $\Delta R/R$, $\Delta L/L$
 K = Number of active arms in Wheatstone bridge

Multiplying Factors for Other Conditions

Condition	Multiply Output Scale by Factor
One active arm Two active arms Bridge output less than 1,000 mV Material other than aluminum Temperature To find R_2	1 2 1,000 100/E (universal) 1 R_1

mean output of a particular resistance.

The chart consists of two sections. One part involves plotting the output of a Wheatstone bridge, made up of SR4 strain gages, as a function of the dimensional characteristics of the gage. An approximate equation permits calculation of bridge output in terms of galvanometer deflection.

$$I_2 = I_1/E [(A_1/R_1) (P/R + R_2)] \quad (1)$$

Where

$$\Delta R/R = GP/(A_1/E) \quad (2)$$

Assumptions were then introduced into the equation of bridge output, making it proportional to two variables, gage factor and gage resistance.

(1) $\Delta L/L = \epsilon$, strain, in %
 also equals stress/modulus of elasticity, or $10^6/P/E = 0.001$ for aluminum at 1000 psi.

(2) P/R potential applied to the bridge, divided by $1/R$ for each 30 ohm gage resistance = $R/20$. (Note: Only one strain gage used on each active arm of the bridge.)

(3) R_2 , resistance of galvanometer = 300 ohms.

(4) $K = 1$, since four arms of the Wheatstone bridge are active and equal in magnitude.

Therefore:

$$I_2 = GP/10,000 [(R/R + R_2)] \quad (3)$$

and in terms of output potential:

$$E_2 = I_2 R_2 = GP/10,000 [(R/R + R_2)] \quad (4)$$

In the second phase of the chart, a family of lines, E_2 , was obtained by holding GP and R_2 constant and varying the galvanometer resistance from 0 to 300 ohms.

Since the chart was derived with the

assumption listed, the accompanying table enables the E_2 scale to be reduced for any of her conditions.

Typical Example—The following illustrates one application of the chart. A constant strength steel beam was to be designed to fit into a test fixture as a wind tunnel model control system (see sketch). Working section of the beam could not be more than .35 in wide and .04 in long. Loading stress was not to exceed 10,000 psi.

The electrical circuit was composed of two SR4 strain gages (R_1 and R_2) forming half of a Wheatstone bridge and a galvanometer with an internal resistance of the order of 30 ohms. It was further desired to use a strain gage of relatively low resistance.

From the chart, the logical choice would be a C11 gage having a resistance width of .35 in, resistance length of .75 in, and resistance of 300 ohms.

To find the approximate bridge output, I_2 , extend the horizontal line, C11—C11, until it intersects the proper R_2 line. Following the E_2 line until it intersects the vertical line shows from $R_2 = 30$ extend back to the E_2 ordinate and read 15.64 microvolts. From the table, the output is reduced, due to the varying conditions, by these factors:

(1) Two active arms, factor = 1/2

(2) 10,000 psi stress, factor = 10,000/10,000 = 1

(3) Steel beam, factor = $10 \times 10^6 / 10 \times 10^6 = 1$

Therefore, output $I_2 = 15.64 \times 1 \times 1 \times 1 \times 1 = 15.64$ microvolts, or approximately 15.6 microvolts. The correct reading E_2 from Eq. (4) = $682 \times 10 = 2,846$ microvolts, or approximately 2.8 millivolts.

No explanation that permits extending the chart should have a basic knowledge of calculus and differential equations.

Discontinuities are being placed will make use of the MIT differential analysis and various types of electronic computers now available or under development at the Institute. Additional information may be had from Dr. Caldwell.

Thunderjets Given Flight Test Workout

Wright Field test pilots established an unofficial record recently when they completed more than 400 hz of accelerated service test flying on three Republic F-84D Thunderjets in less than 30 days. Flown averaged 54 in the air for each day flown, covering an estimated 190,000 air miles before were ended.

Ranging from 1000-30,000 ft altitude, flights consisted of pilot handling duties, checkouts, and engine time at various percentages of rated rpm.

All scheduled maneuvers were completed and only a few minor flight discrepancies occurred.

Despite first part of the test program, craft were gage, regular 5000 and 1000 in. respectively. Accelerated Service Test Maintenance personnel were placed five by wing on jet engines, returning them in places as needed.

Representatives of Republic Aviation Corp and Allison division of General Motors Corp aided the Air Materiel Command in carrying out program.

Amid with its 50 cal machine guns and rockets carried under the wings, the F-84D's armament may be serviced in less than 10 min and the engine replaced in less than 50 min.

Analogue Computation Course for Engineers

A special three-week course in analogue computation will be given at the Massachusetts Institute of Technology, Cambridge, Mass., beginning June 20th.

It will deal particularly with treatment of engineering problems by means designed for the solution of differential equations. Communication will be under Dr. Samuel H. Caldwell, professor of electrical engineering and head of the Institute's Center of Analysis.

Objective of studies is to provide engineers with a broader understanding of uses and possibilities of analogue computers. "Increasing availability of these machines throughout industry," Caldwell points out, "makes it important that trained personnel be prepared to help exploit their benefits."

No explanation that permits extending the chart should have a basic knowledge of calculus and differential equations.

Discontinuities are being placed will make use of the MIT differential analysis and various types of electronic computers now available or under development at the Institute. Additional information may be had from Dr. Caldwell.



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High Sensitivity...for accurate bearings on weak signals

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Weight, only 50 pounds—mounted



Model 21-2000 is the latest type to find direction. All controls easily accessible and knowledge of bearings accurate.

Even high signal sensitivity for most noise bearing accuracy. For weak noise and light signals, the ADP is the answer. It is completely self-contained. It is only about half the size of similar service equipment, and only two-thirds the weight—without installation in quality.

Here is no automatic direction finder that makes that ADP practical. It is the only RCA "21" receiver which is more than 10 times as accurate as any other ADP. Signal sensitivity is better than 10 decibels per meter over 100 miles of range.

150 to 1750 Mc. Signal receiver range is 0.5 to 100 miles. It is less than 5 meters in size. Power: 100 watts, only 1.5 amperes at 28 volts, or 7 amperes at 14 volts.

For full information on the RCA "21" ... which opens the new RCA and RCA's requirements ... write RCA, American Radio Co., Department 94-C, Camden, N. J.

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Strutting through the sub-matmosphere like a huge, silver bee, the Northern Flying Wing YB-49 can carry a bomb load of 30,000 pounds! Such a plane naturally calls for materials that provide maximum strength with minimum weight. And like the majority of U. S. plane manufacturers today, the makers of the Flying Wing are meeting these requirements with OSTEON Aerocel Tubing.

Inherent strength and low weight characteristics make G8T/CD Acrylic Tubing ideal for a great many applications, and it offers the additional advantages of being easily installed, formed and fabricated to the user's exact requirements.

OSTUDCO made the film "Chernobyl" and produced its main cast, and is one of the nation's largest suppliers of specialty tubing—widely recognized for precision craftsmanship and low percentage of rejects. Prompt deliveries can be assured from special alloy, steel, stainless and from a wide range of tube sizes formed on hand for engine, aircraft, mechanical, and defense tubing parts—all produced to Army, Navy, and APS specifications. For list names, contact your nearest OSTUDCO Sales Office now.

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Manufacturers and Suppliers of Seamless and Electric-Welded Steel Tubes,
Steel and Stainless Steels. CLEVELAND, OHIO

NEW AVIATION PRODUCTS



Plane Ground-Power

Line of aircraft ground power units is offered by Industrial Electronic & Transformer Co., 1131 E. Street Ave., Los Angeles 11, Calif. Canadian agencies or motor generators, regulated constant stabilized output, include 1000 and 1500 amp models. Gas engine generators, either mobile or self-powered, for constant (potable) or surge engine starting, have ratings from 100 to 2000 amp. Motor generators feature electronic controls for 5 percent regulation and 1000 to 1500 amp output. Gasoline units run 125 to 1200 rpm at 28.5 d.c. Schematics provided with electronic controls provide maintenance for operation with less than .5 percent regulation, ratings are from 45 to 1200 amp d.c. resistance at 75 deg. Fahrenheit. Motor generators provide 10 percent regulation with ratings from 125 to 500 amp output.



All-Purpose Tool

For less maintenance or battery work, multi-purpose, portable electric tool can be used for drilling, mowing, flag, sewing, polishing, and other specialized applications on wide variety of wood and metal materials.

Offered by Seafin Tool Company, 2548 W. Peck Blvd., Los Angeles, Calif., the device has three separate spindles. One provides $\frac{1}{2}$ in. drilling in metal or $\frac{3}{4}$ in. in hardwood. Second

specifies given corresponding stroke 2 is long for backswing, fling and is half cutting, and may be adapted to go across, corresponding motion, back, front, etc. Bottom stroke is for right angle drive, winding and leading with down or for wax back application. It also can be used with double shaft or adapted for circular saw.

Furnished with unit 4 in clutch which may be used interchangeably on all three models. Via shafting, gear reduction can be increased from 5:1 to 10:1, providing ample torque for heavy duty use. Specific speeds are 2000 rpm or 1000 rpm. Instantaneous control of 11½ ac/dc motor is provided with a bucking transformer.



'Torn Thumb' Motor

Especially designed for mass applications, accordingly small 3 to induction motor made by Lear, Inc., 110 Isaac Ave., N.W., Grand Rapids 2, Mich., incorporates four- or six-pole, two-phase, 480 cycle current construction. Unit has high resistance rotor which gives approximate linear relationship between speed and torque.

If currently used as self locking servo systems with conventional amplifier circuits, torque to inertia ratio of 50,000 revs/sec sq. can be obtained. Both four and two pole versions can be supplied for large mounting with or without feedback.

Anti-Static Polish

Combustion polish and cleaner for plastics, made by **Park Chemical Company**, 8874 Midway Ave., Detroit 4, Mich., incorporates dispersants to avoid generation of static during application. Marketed as "Turbo Antistatic Plastic Polish," product is recommended for use on Plexiglas, Lucite, Vynilite, polystyrene and other molded or sheet plastics. Material is reported to remove shallow scratches, give high gloss finish, and not cause or discolor any type of plastic.



Servo Aid

Genotype offered by Anna Czap, 294 50th St., Brooklyn 32, N. Y., *delens* at a voltage proportional to acceleration of rotor rather than velocity of rotation. Company claims unit is especially suitable for servo systems having severe drooping problems and systems where acceleration must be measured or limited. With 12 amp in 350 ohm, field, generator delivers 1 volt for an acceleration of 1600 radians/sec.² Maximum speed is 9000 rpm. Rotor inertia is 25 oz. in. weight is 1 lb., and overall length, including of shaft, is 3.375 in.



Coaxial Switches

New group of compact, lightweight, cordless air tools announced by Design for Industry, Inc., 2915 Detroit Ave., Cleveland 13, Ohio, for use in and under appliances, are available with optional drive for remote control or with manual control for panel mounting. Single plug switches are offered in 2, 3, 4, and 6-amp for use with RG-1/4 and RG-1/2 cable. All models accept type "N" connectors. Standard wire sizes are less than 15 to 1 to 1000 sq. mil. with pins of net max. diam. 2.3, 2.5, 3, 3.5, 4, 5, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100 sq. mil. Size of 2-way switch with solenoid drive is 240 x 240 x 52 in. Weight is 28 lb.

[illegible]

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power

Exide Aircraft Batteries supply dependable power for every type of aircraft service. In 1917, the first battery equipped plane carried an Exide. Since then Exide engineering skill and manufacturing ability have kept pace with the rapid strides of aviation... serving with batteries of dependability, long life, economy and low-cost maintenance.

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SALES & SERVICE



BUSINESS FLEET

Pinpoint in the Executive Fleet, Inc. line up their four Navion four-place planes at Rosend Field headquarters, Hartford, Conn.

Case. Left to right: William H. Knudsen, traffic manager, G. Stewart Hixon, president, J. L. Thompson and C. E. Hansen.

Navion Fleet Serves Executives

Nonscheduled service offers 10 cents a mile travel in four-place planes from Hartford, Conn.

Executive air travel on a nonscheduled basis at the moderate introductory rate of 10 cents a passenger mile to any point in the U. S. or Canada is the "travel package" being merchandised from Rosend Field, Hartford, Conn., by Executive Fleet, Inc.

Currently the company operates four Ryan Navions and four five planes, all World War II Air Force veterans. G. Stewart Hixon, president, advertises that 10 cents a mile is a better proposition with only one passenger. But his points out first experience shows that the average flight carries two passengers, and the single-passenger service is necessary to handle complete executive travel needs.

Just Like Own Plane.—For the difference between the average cost of airline travel and Executive Fleet's rate, the business man gets something additional in effect: he can be on his own plane at his disposal with a constant pilot to take him and hang him back without regard to time tables and schedules. He can make his travel plan at the start of his schedule and he can fly direct to cover places not served by scheduled airlines. Sample trip costs from Hartford in-

clude: to Boston, in 40 min. for \$9.98, to New York in 41 min. for \$9.70, to Washington in two hrs. for \$16.60. Rates do not include 15 percent tax.

The organization is outfitted as a scheduled carrier. VFR, day and night, passengers and cargo. On the basis of present business it anticipates a traffic potential of about \$60,000 per season for the year.

Airline Effect.—It is explained that the service is not intended to replace an airline service, but to fill in where the airlines do not serve adequately. The 10-cent a passenger mile rate is made to approximate the direct executive jet round under a contract arrangement. Single trip rates to the general public are slightly higher but are still lower than consumer charter flight charges, Hixon states.

Executive Fleet started experimentally at Danbury, July 1948, with one Navion, soon added three more and moved to Rosend Field shortly after reorganizing Danbury airport facilities. Operations are on a 24-hr. basis at Rosend, using administration building formerly occupied by American Airlines.

Large Volume.—The rate was set on

the theory that "large volume at low cost profit is better than large profit with no volume," and that nonscheduled rates could be mutually compatible to airline rates, despite the higher operating cost per passenger when smaller planes are used. The contract arrangement has developed sufficient volume with companies to justify the rate, Executive Fleet reports, and prospects are that the rate may be reduced further to attract still larger volume.

Excellent cooperation between scheduled airlines and Executive Fleet is an exchange of passengers is reported. Some of the airlines give special help to Executive Fleet in obtaining instructions. In other cases, airline passengers arriving in Hartford on route to a small town destination not served by the airline are told of the non-scheduled service which will enable them to complete their journey by air.

In return, the organization schedules its connecting business once for trips on the line which best serves the individual's needs, and averages combined non-stop by Navion and airline.

Example-Example. is a business man wishing to go from Hartford to St. Louis City with stops at Binghamton, N. Y., and Pittsburgh, Kansas and Reading, Pa. With available airline schedules it is most convenient and time saving for Executive Fleet to connect him on to the four business stops, and then on to Washington where he boards a scheduled airline for Mexico City. He is provided with restaurants, passport and necessary papers for the trip, and with return fare tickets.

The arrangements are made without charge other than the mileage fares by the fleet's Navion, plus any actual expenses involved by the arrangements, such as visa and long-distance calls.

After approximately 11 months operation, Executive Fleet is generally satisfied with its business formula and is looking forward expanding its program within the next year to include operations at several additional bases. For previous planes now are being studied.

New Detroit Airport

Detroit's Common Council has agreed to sponsor the Detroit International Airport at Windsor, Ont., across the Detroit River. This opens the way for CAA to begin preliminary discussion with State Department on a treaty with Canada for the airport. The field, in Canada, is only 5.5 miles from downtown Detroit as compared to 32 miles for the present Willow Run terminal. Meanwhile Michigan state senate is considering an appropriations bill which would include a \$1 million matching fund to be used with Federal aid for the international field.

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offers the . . .



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in a steel fastener to
the aircraft industry

the **HS-2R7**

Aerodynamicists say:

"The HS-2R7 provides smooth surface, eliminates laminar flow separation and increases fuel economy."

Aircraft designers say:

"...rapid installation, without need for fitting in order to achieve smooth or dimpled finish."

Inspectionists say:

"...uniform high quality... cuts rework and rejection."

Other features:

- The average HS-2R7 weighs 44% less than its competitor, AN Bull Bull Washer, which costs more.
- Stays in competition — One HS-2R7 equals 2 B & A D rivets.
- Drill reducing to 10 threads in 1/2" — no need for re-drilling — no need for re-drilling — no need for re-drilling.
- Standard drill point and sequence — no expanding drill bit in special die-purpose equipment.

HS-2R7 and HS-2R7-10 — Network installed



BRIEFING FOR DEALERS & DISTRIBUTORS

MORE POWER FOR LUNCOMBE—New model of the Luncombe four-place Whiter Solon is powered with a Continental 345 hp. engine bearing a new Hartzel automatic two-position propeller, and priced at \$5445 (empty weight). The additional 20 hp. (empty weight) was 165 hp.1 pulls the airplane off the ground at redline of full gross weight of 2340 lb., or less than 900 ft., the manufacturer states.

Initial rate of climb with new engine is reported better than 1200 fpm. and cruising speed is more than 145 mph at 7000 ft. Fuel consumption at rated cruising speed is reported less than 11 gal./hr. Except for powerplant change the airplane is basically similar to last year's high-wing two-seat four-place 345 model.

Luncombe is showing new plane's sales appeal to potential six state states operators and others needing a plane with quick takeoff, steep climb and short landing characteristics capable of rugged operations. Arrangements to convert earlier 345 Solon to the new powerplant include a field kit available for \$179 (see General, or factory literature for \$579).

ENDURANCE COSTS—Cost of the new model endurance aerial flight by Bull Bull and Bull Bull (see General) at \$300 a day for 47 days, or approximately \$12,000 in all. Total includes several weeks after flight at Fullerton, Calif. amounted to about \$5,000 for a net loss of \$4,000.

Principal industry contributors included: MacMillan Oil Co., which supplied fuel and oil, \$5000; American Aircraft Corp., \$1000 plus use of the endurance plane "Skunk Lady"; and American Airlines and Continental Motors \$3000 plus use of the powerplant. From newspaper stories, air show and theatrical appearances made up the rest of the receipts. Expenses of these three previous endurance flight attempts were not covered in these figures.

CESSNA 140 DELIVERIES—First delivery flights of eight Cessna 45 hp. turbocharged 140s took them from Wichita in eight different directions terminating on both coasts and intermediate points.

Telerecord reports from eight Cessna dealers pilots showed an average of 201.6 mph. speed. The 207 mph. fuel consumption was generally low although some of the firsts had to go through storms and bad weather conditions. Greatest trip mileage was 1495 and smallest was 705.

NEW YORK HELIPORT—New York's first commercial downtown helicopter port, designated Heliport 1, has been opened on Pier 41, on East River at Connecticut Square, by Metropolitan Aviation Corp. Operator has been flying helicopters in New York two years, being at Times Square, N. J. Landing fees starting at \$1 will be charged for efficient helicopter landing at the 161 ft. by 5 ft. area. Metropolitan has applied for air mail routes and hopes to bring mail into downtown New York. During the year as a heliport followed a survey of charting and building and other uses and newspaper distributors who indicated they wanted a close-in operation.

9000 STALL INDICATORS—With over 9000 safe flight stall warning indicators now in use since the device was first installed two years ago, there is no record of a single fatal stall accident in a plane equipped with this device, the manufacturer reports. This is in spite of the fact that CAR accident statistics show that there are normally a total of 25 fatal stall accidents a year for each 4000 non-subsided planes. The device is now standard equipment on new American, Stinson, Cessna, four-place Piper, and emergency Luncombe. It is also standard on Cessna and McDonnell Jet fighters and Cessna 240 aircraft.

FLORIDA HILLER AGENT—American Industrial Sales Corp., Soling, Fla., has been appointed Florida distributor for the Hiller 360 helicopter, and will disseminate the entry-type craft in Florida where first export deliveries are expected to be made. The 360 is being offered equipped with dual and spray dispensers and with a conventional type cabin enclosure.

—ALEXANDER McSWEET

A MESSAGE TO AMERICAN INDUSTRY • 74th OF A SERIES

"Give us the tools..."

YOUR ONLY CHANCE of Getting Ahead

Where is the "brave new world" so glowingly promised as by the politicians during and after the war? We were told then that postwar America would be 50% better than it had before. Why has that promise faded now? Why are men today discouraged and frustrated?

We have not yet made good 1944's promises because the American worker turns out no more in an hour now than he did in 1941. We are getting more total production in our country—but only because we have more people working. Not because each one of us is producing more. American industry's ability to turn out more and more goods—with less of each worker's time and effort—has been stymied for eight long years.

Progress has been blocked because in some cases workers have not been willing to work as hard as they did before the war. In other cases unions restrict the use of labor-saving machines and methods. In some places obsolete building codes and ordinances prevent advances. In still other cases progress has been blocked by collusive practices between unions and manufacturers or operators.

But the biggest block to progress is the fact that our industry in the United States has been unable to provide our workers with all the new tools and equipment that they need.

Increasing productivity—that is, each one of us turning out more in each hour of work—is the key to higher living standards. Productivity depends directly upon the kind of tools workers use.

His tools, more than anything else, determine how much a worker can turn out, and what his paycheck will be. It depends in large part on what he turns out—not on how long or how hard he works.

Look what happened in our country in the forty years from 1950 to 1940. Productivity of the United States more than doubled. It doubled because:

Business investment in capital equipment gave workers new tools—tools that had three and one-half times as much power—

So—Americans' living standard rose almost 50% while the average work week was dropping from 61 to 43 hours.

Industry did continue to raise its output per man hour, even in the depressed 1930's. But it did it because, with unemployment widespread, companies used only their most efficient equipment. Actually the great depression saw industry fall far behind in the job of providing workers with new tools.

Then came World War II. Few new tools for peacetime industry were produced. As a result of depression and war, the U.S. fell behind in needed investment in new industrial facilities by more than \$100 billion.

Since the war business has spent almost \$60 billion for new plants and equipment—

But the greater part of that money went to expand production to take care of the needs of our bigger population, and to replace plants and equipment that were worn out and ready to be junked at the end of the war.

continued on next page

Only a small fraction of the \$60 billion went to modernize equipment — the equipment that increases efficiency and improves productivity of the individual worker.

Right now industry is desperately trying to do the job of increasing efficiency of machines so that each worker can turn out more.

McGraw-Hill's national survey of *Business Needs for New Plants and Equipment* shows that manufacturers plan right now to spend in the 5 years ahead three-quarters of their capital funds to replace and modernize facilities. The biggest part of the more than \$55 billion industry plans to spend on its plants and equipment will go directly to improve efficiency of the individual.

If industry can carry through its plans — and expand them as it would like to and as it must do — the U. S. can catch up on its depression-war-time lag in progress within a few short years.

If American industry is allowed to ease the money to buy the equipment, it can make the American standard of living 80% in one generation — in the next 25 years. No other nation can promise its people that much — and deliver on the promise.

But the promise can only be fulfilled by American industry. Whoever you turn, industry has dramatic new ways of doing things. Using oxygen by the ton, steel makers are increasing production from blast furnaces by 20%. New high-speed machine tools are doing three times the work of 1940 tools. A new coal-mining machine will multiply a miner's daily output 10 times. Diesel locomotives do the work of three steam locomotives on many jobs.

New products — and larger production of standard products — are already making their impact on American life. Two million Americans will get new television sets this year. Automatic washing machines, electric dishwashers, and home freezers are easing the daily tasks of thousands of housewives. Millions of homes that did not have them before the war now have telephones, automatic heat and refrigerators. Frozen foods, nylon clothing — these and many other things

coming along now — will shape the real new world for Americans.

But industry can provide them only if it can keep on investing at least \$15 billion a year now — and more in future years — in new plants and equipment.

Today Washington is taking a course which, if pursued, will make that investment by industry impossible. Government spending now strains our resources to the limit, and more multi-billion dollar spending proposals are being piled on. But government spending cannot improve American living standards. It never has, and it never will. Increasing government spending now will only block progress, because the government proposes to pay for its plans by taxing away the profits industry is using, and must continue to use, to improve and expand its plants and equipment — our only hope for greater worker productivity and higher living standards.

Better living can only be paid for with more production. And we can only get more production by increasing productivity — by each one of us producing more for each hour of work.

The first thing is to get the production — in peace and in war — for better living — for security. Industry is planning to provide it — and is using \$13 billion of its profits this year to improve and expand its facilities.

The only sensible, the only safe national policy is to make it possible for American industry to do its job — not to terrorize private industry with proposals of reinstate taxation and paralyzing controls and threats of nationalization. For American industry is not a thing apart from the American people any more than is government. American industry is the backbone of the American people and whatever makes industry do its work better contributes most to the common welfare than a bureaucratic government can ever hope to do.

Sam H. Krawcheck, Jr.

President, McGraw-Hill Publishing Company, Inc.

AIR TRANSPORT

Rickenbacker Proposes Merger

EAL President tells Senate committee he could operate five carriers plus his own at non-subsidy mail rate.

Eastern Air Lines President E. V. Rickenbacker has piled the air transport industry. He proposes to take over operations of five non-subsidy carriers and use the government-owned \$10 million in mail pay annually.

His offer was enthusiastically welcomed in congressional circles.

In a letter to Sen. Edwin Johnson (D., Colo.), chairman of the Senate Interstate and Foreign Commerce Committee, Rickenbacker said "EAL offers to operate the entire domestic system of any one or more of (these) five carriers at a non-subsidy rate."

• **Cape Air Lines**—The \$54,000 ton miles of mail carried by this company in 1945 for \$4,000,000 could be handled by Eastern at its present rate rate for only \$1,750,000, saving the federal treasury \$4,130,000 annually, Rickenbacker stated.

• **National Airlines**—The 316,000 ton miles of mail handled by NAL in 1945 at a \$1,218,000 cost of rate could be carried for \$212,000 at EAL rates, saving \$1,006,000 annually.

• **Delta Air Lines**—The 917,000 ton miles carried in 1945 for \$1,734,000 could be handled for \$303,000 at EAL rates, saving \$1,431,000 annually.

• **Chicago & Southern Air Lines**—The 451,000 ton miles carried in 1945 for \$1,561,000 could be handled for \$111,000 at EAL rates, saving \$1,450,000 annually.

• **Colonial Airlines**—The 32,800 ton miles handled last year for \$1,175,000 could be carried for \$55,000 at EAL rates, saving \$1,120,000 annually.

Average low rate rate of the five last year was \$4.45, Rickenbacker reported. But EAL's rate for the carrier would be between 60 and 65 cents a ton mile.

Commenting "It looks good," Sen. Johnson announced that his committee "will examine the advisability of changing certain of the fundamental tenets of the 1935 Civil Aeronautics Act which would be required" to carry out the Rickenbacker proposal.

• **Details Asked**—In a letter to the EAL president, Johnson requested details of his plan, including answers to these points:

• Would EAL acquire the five carriers



Eastern's Rickenbacker

through merger, purchase or suggestion of certificate? (It has previously been the contention, Rickenbacker added, that certificate cancellations of non-subsidy carriers and declared Mid-Continent Airlines' proposal to purchase Pacific Air Lines' system would set an undesirable precedent.)

• Would EAL take over the personnel and property of the line?

• Would it purchase their stock and assume their obligations?

• Would EAL, under present-day service to each city on the routes of the five lines?

• Why did EAL "contingently" seek Northeast Airlines?

Sen. Glenn Browder (R., Me.) is invited EAL to come forth with a proposal to take over Northeast.

• **House Votes Suggested**—In his characteristic appearance Rickenbacker advised the air transport industry "to get on its feet and learn the lessons of their own economy and efficiency. One must work as he expects to be supported." As the House of Representatives, he helped airlines get rid of their economic headaches without going directly into the control of the airlines.

As transportation, Rickenbacker declared, is suffering from too much holding and too waiting. "More regula-

tion and more particularism are not the cure. The individual carrier and its artificial support, its clinging to the form of life, and even exposure to the insensate economic laws that apply to business in general."

• **Insistence to Industry**—Saying he would welcome the attendance of outside airline executives at EAL management meetings, Rickenbacker outlined his observation "No one good apple can stay in a barrel of rotten ones forever without being contaminated. The rotten the other apples can be helped to become self-sufficient and prosperous, the more my job will be."

• **Program Recommended**—Rickenbacker's program to put the industry on a sound basis.

• **Clear separation of subsidy from competition** for annual transportation to eliminate the "cost-plus" philosophy. He added that "subsidy" routes in the public interest should be recognized, recognizing real need.

• A law prohibiting newly authorized carriers from receiving mail compensation at a higher rate than that being paid to the line already operating the route.

• A law on government leasing to require Eastern Airlines to the Reconstruction Finance Corp., he suggested, an attempt to secure financial treatment by CAA so that the government will not lose its investment. The Civil Aeronautics Administration, similarly would be required to favor aircraft manufacturers with RFC loans in the reinforcement of air plants.

• **Five Reductions** through economy and efficiency. He pointed to EAL's plans for method reductions for economy price and for a half-cost-mile system. New York-Boston, each one. He set at American Airlines President C. R. Smith's opposition to such service, realizing that in 1945 Smith pleaded in a magazine article for "a mad theory of air."

• **Transport of all first class and air**, where delivery would be expedited. If half of the current volume of first-class non-100 mile proceeds was to go to EAL, Rickenbacker declared, the air line's present volume of 12 million pounds of mail business annually would be multiplied eight times. Expansion of the aviation industry for national defense would justify additional cost.

• **Development of transport prototypes** by the military services.

• **Uniform application of the 1935 CAA Act**. He let at legislation to regulate and allocate certain "who have attempted to develop 'government'" for the purpose of "sustaining CAA."

• **Costs** clothing their operations with "legality." Denouncing CAA's policy of "equitable profits," he said the Board, instead, should use "To provide fair

Before sold CAA. "We can't make a decision on long-range plans for acquisition of new and larger aircraft or for obtaining permission ground and sea-landing facilities until the certificate decision matter is determined."

LAA and that since starting service in the fall of 1947 it has demonstrated its ability to operate helicopters with regularly scheduled operations. It also pointed out that scheduled operations would bring with helicopters and has completed a year of nighttime service.

► **Passenger Wasted—**Bellevue declared that LAA did not originally seek as efficiently to carry passengers because helicopter equipment suitable for scheduled transportation of persons had not been produced. Cost of satisfactory design and use for passenger operations will soon be available, he declared. "Economic self-sufficiency of scheduled helicopter service cannot be achieved without automation to carry persons as well as mail and property."

LAA boosted its mail loads from 20,160 lb in October, 1947, to 113,215 lb in April, 1949. During the same period, costs declined from about \$13 a ton mile to \$8.82 a ton mile.

Smoke Detectors Likely to Return

Revolution of smoke detectors on all airline transports appears likely because of continued improvement in reliability.

After the smoke detectors tested in hundreds of tests during the Civil Aeronautics Administration presented the current to document the early study in 1945. Since then, about 16 percent of the airlines' planes have current test detectors as part of an Air Transport Association study made in cooperation with CAA, the National Bureau of Standards and the manufacturers of the devices (Aviation Week, Feb. 14).

► **Staffed Cautious—**Latest results of the test program indicate smoke detectors used are giving generally satisfactory service. Studies will continue until about 1950 to 1952 in, at flight time has been recommended.

Some airline engineers feel the smoke detectors are satisfactory because the airlines have not been chartered on early. There is some belief that all airlines starting to malfunctioning and the airlines have not been interested in ATA is accordance with test program provisions.

► **Baggage Compartment Tests—**CAA's baggage compartment test program is still in progress at the Indianapolis Experimental Station. Objectives are to evaluate the fire hazard in baggage compartments and to determine the most suitable type of smoke detector for these areas.

Lightplane Airline

Lightplane airline operators already are looking to provide service to the Atomic Energy Commission's latest bases town—Aroo, Idaho.

Until recently a comparatively isolated community of 750 persons in a mountainous desert area of south-central Idaho, Aroo's population is expected to pass 6,000 as AEC construction work gets under way.

With this mushroom growth in population, George W. Snyder, Jr., of Salt Lake City, has asked CAA for a certificate to carry passengers, cargo and mail between Aroo, Pocatello and Idaho Falls, Idaho, with time place Birch River. ► **Engineer—**Arthur Slaughter, a pilot and chief engineer of Challenger Airlines Co., Snyder has been active as a charter, non-scheduled and certificate operator for 15 years. Besides the routes to Aroo, he needs to open light plane links out of Salt Lake City to Phoenix, Ariz., El Paso, Tex., and Denver, Utah.

Another lightplane operator, Carlo Air Service, is now providing Birch River service between Albuquerque, N. Mex., and the Atomic Energy Commission's Los Alamos scientific laboratory (Aviation Week, Feb. 15). Carlo also has requested a CAA certificate.

Interest in lightplane airlines has increased during recent months because of CAA's proposal to eliminate Civil Air Regulations which now restricts at times scheduled single-engine passenger operations. In addition, Congress is considering Post Office backed legislation which would permit wide expansion of air mail routes suitable for light planes.

AAA Loan Approved

All American Airways' application for an \$300,000 loan from the Reconstruction Finance Corp. has received CAA approval.

Too Fast, Too Far Caused C-54 Crash

The Alaska Airlines accident on Nov. 10, 1947, when a C-54 went off the end of the runway at Seattle-Tacoma Airport and rolled over with a serious nose-over, was probably caused by the crew's attempt to land the plane too far from the approach end of the wet strip and at too great a speed.

This was the Civil Aeronautics Board finding in its report on the matter. Eight occupants of the C-54 and one occupant of the automobile were killed and 17 others in the plane were injured.

► **Approaches Described—**Bound from

Standard for Industry

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Howe	John Johnson

RELUBRICATION SERVICE

Having said that, I believe that the Commission is right to be concerned about the potential for abuse of the new powers. I am sure that the Commission will take appropriate steps to ensure that the new powers are used in a responsible and transparent manner.

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TRANSPORT

Alaska Copter Service

Alaska Airlines plans to supplement scheduled territorial services with less costly charters.

President Jeanne Wooten said AA would utilize the Bell Model 47 helicopters on charter flights and for government rescue work under contract. Les Leiselt, who helped organize Helicopter Air Transport, Camden, N. J., has been appointed to head Alaska Airline's helicopter division.

SHORTLINES

■ **All American**—Plans to integrate feeder service between New York (Newark) and Pittsburgh via Wilkes-Barre and Scranton, Wilkes-Barre, and other Pennsylvania ports about June 30. Flights between Pittsburgh and Cincinnati were integrated into last month.

▲ **Assamites-Topped** all freight records by flying 3,185,277 ton miles in April, up 37 percent over same month last year and 7 percent above previous peak reached in May, 1949. Air express totaled 350,193 ton miles, down 17 percent from April, 1949. CAB has denied American government's

- **Associated Air Transport**—Has added C-47s to its fleet of turboprops to serve New York City through regular use of Westchester County Airport, White Plains, N.Y.
- **American Overseas**—Hopes to have its first Boeing Stearman in time for Atlantic service by Aug. 15.
- **Associated Air Transport**—Has added C-47s to its fleet of turboprops to serve New York City through regular use of Westchester County Airport, White Plains, N.Y.

► **Boat**—A contractor of contractors is to operate second-class [air coach] service between New York and Puerto Rico. The Teaneck, N.J., company plans to use C-46 equipment and offer these seats a mile from.

► **Bozell**—John E. Waller, formerly assistant to the president of United Airlines and now vice president of the

PRIM—Late last month planned

► **Natural**—A CAB examiner has recommended that NAL be given temporary authority to street Oslo and Copenhagen. It is formerly owned

► **Northwest**—Flew 6,819,000 revenue passenger miles in April compared to

\$117,000 same month last year. Company was close to the break-even point in April.

- **Northwest—Reported** \$365,149 net profit on \$1,522,577 gross revenues. April compared to \$363,649 loss on \$1,542,217 gross revenues same month last year. Not less the first four months of 1999 was \$1,115,821 against a deficit of \$2,187,442 in same 1998 period.
- **Pan American—Last month** com-

▶ **Southwest Airways**—Passenger traffic in April was up 75 percent over same month last year.

► **TACA Aeronautica, S.A.**—Reported net loss of \$2,852,775 in 1948 compared with \$2,208,780 deficit in 1947. Operating revenues declined from \$5,357,245 in 1947 to \$3,608,696 last year.

- **TWA**—Rapidly negotiating for more Consolidation. Airfreight volume hit all-time high in April
- **United**—April revenue passenger miles rose 16 percent above same month last year. Mail volume was up 45 percent and freight 50 percent, but cargo fell 79 percent

CAB SCHEDULE

June 11—Preexisting conference on effects of exposure to the 1994-1995 season's Hantaan Virus begins at carrier work program from May 22. (Dated 2117)

June 12—Continuation of hearing in health on treatment of medical waste ends. (Dated 2118)

June 13—Hearing in Vol-Air Bus and Transport Agency ends. (Dated 2119)

June 24—Hawking on Boeing 4th order
 final application of 11 new Aerospace
 Technology (ITA-041 1170)

June 25—Hawking on Pacific Aerospace
 Corp. 4 Aerospace Technology (ITA-041 1170)

June 26—Hawking on Boeing 4th order
 final application of 11 new Aerospace
 Technology (ITA-041 1170)

June 27—Hawking on Boeing 4th order
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 Technology (ITA-041 1170)

June 28—Hawking on Boeing 4th order
 final application of 11 new Aerospace
 Technology (ITA-041 1170)

June 29—Hawking on Boeing 4th order
 final application of 11 new Aerospace
 Technology (ITA-041 1170)

June 30—Hawking on Boeing 4th order
 final application of 11 new Aerospace
 Technology (ITA-041 1170)

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July 16—Hearing on removal of Pioneer Air Lines. Further availability and expansion of service at points on routes of Frontier Continental and American. (Hearings 259)

July 16—Hearing on Extension of Warrenton and Tillamook Air Lines applications for all-weather route certificate between the U. S. Forest and the Willamette Falls. (Hearings 260 and 272)

STRICTLY PERSONAL

TWA & FAA IN GLOBAL WARFARE—Our San Francisco correspondent, Ted Palmer, says it was pretty embarrassing. When the 8 F. Advertising Club celebrated Airlines Day of World Trade Week recently, a small delegation of airline people were among the 500 present. Some 15 writers furnished food trays for which CAFA members from their airlines. "Who do you suppose won the prize furnished by the Ad Club?" he asks. "Well, TWA and Pan Am. But the punch line is even better. The day before, John Rogers of FAA had asked Fletcher for advice. Fletcher has suggested FAA donate a globe."

NOODGE BOYS WILL GET IN TROUBLE—Frank Miles of Freshfield's publicity department called our attention to recent car crash in New York subway involving a passenger, Noddie. With an accompanying sketch of an airline pilot testifying that he didn't see anyone in the car until after the crash. The undoubtedly will raise the temperature of many subway riders, and airline pilots.

BOW NOW THERE, PUDDINGCOMES!—An editor gets all kinds of mail. Someone has put us on one of these "get out" order lists and claims an appeal from Advertiser Puddingcom at Long, Nigeria. We quote: "We thank you very well for reprinting an advertisement of mine as now serving you in a format, which we hope you will be pleased to accept it," says Puddingcom. He wants you paid ("both sides"), which fact we should advise in American Wire. However, there is a small snag. Puddingcom wants that we pay him said fees right now. He definitely is no dope. He has a pointed note to this pen pal staff. Send him "All letters are welcome. We collect letters, magazines, too short, ready, views, say short and snide solo."

Who has some stop short for this bright young man?

BITES ABOUT PEOPLE—Dave Howard of Hawthorne Flying Service was chosen by the owners of Charleston, S.C., to fly New York's Mirror O'Dayair from Washington to Charleston for the airlines. Some months back it was Coastliner Air Line's Bob Fox who was looking out at us from the "Calcutta" line of distinction. Ah! Now as we go (the pen of E. Merrill) Andrus of Andrus Air Activities in those national mid of Hatz back. Aviation won't be seeing so much as William E. Kant at Memphis. Due to the death of his partner, he will devote all his time to the hunter business. He has turned out his air suits to "Bee" Denton. Noddie Denton is now president of Southwestern Air Service. He succeeds Rex T. Smith of Atlanta, who is devoting more of his time to non-aeronautic interests. Good news from Wesley Raymond, Dayton, Ohio. He has received from a broken spine suffered in a forced landing six years ago Wayne Weaver, secretary of Aeronautical Training School, was selected to write chapters on the role of the private pilot in the aviation education. This is the new book in preparation by the National Association of Private School Aeronauts.

SLICK'S TIME KEEPER NEEDS A KEEPER—Bob Stone writes from Slick Airways' San Antonio headquarters about the unfortunate John Jacobs, head time-keeper, who left recently as company busman on one of Slick's nightflights for what he expected would be a routine trip to Newark. His flight had an hour's delay in Chicago for crew change and going. Jacobs, who by that time enjoyed his last, which he had forgotten in St. Louis, was a sleepy, hungry and tired time-keeper sitting at Slick's Chicago office in those early morning hours, and only interested in getting to Newark.

There was a small fleet of C-46s on the ramp, and when Jacobs, through sleepy eyes, saw two men get up from their chairs and follow him to the office with the remark that they were ready, he stood and followed them. The pilot and pilot had been told blue boarding for about 2 hours when Jacobs got carried on to where he'd be getting into a soft bed. Finally he ventured to inquire of the copilot, "About what time do we get to Newark?" The man on the right side dropped his jaw, threw his mouth wide, glanced at his wrist and said "It about two hours" he'll be in Denver. Jacobs almost swallowed his boarding aid, and had a difficult time trying to explain that he wasn't kidding and didn't want to be in Denver.

The jet is a state-of-the-art, but Jacobs finally did get to Newark (on St. Louis, Chicago, Detroit, etc.). The pilot came where after a lunch at the Roney Tavern with the Newark gang, he then showed a San Antonio boarder together into a tag in his lapel ring. "Take me back to Texas."

THAT WAS NO DC-3—Somebody in American Airlines or their agency dipped so in preparing that lesson of the other day looking odds to the Douglas DC-3. Puck shows a Douglas flying low over a "turning" stage road. Ralph Grainger of Park Ridge, Ill., points out that it's not a DC-3. It's a D87 (Douglas transport) Ch. in TWA always insisted on calling it, a D87 (Douglas transport) D87.

—RHW

WHAT'S NEW

New Books

"Airline Traffic Patterns" by Gene Koop, head of aviation operations school, Parks College of Aeronautical Technology of St. Louis University. 186 pages. Published by McGraw-Hill Book Co., 130 West 42nd St., New York City. Price \$5.50.

"Aircraft Weight, Balance & Loading" by Charles E. Chappell, aviation consultant for Northern Aeronautical Institute. Studies and diagrams in either bound or unbound format. Published by Aero Publications, Inc., 2162 Sunset Blvd., Los Angeles 26, Calif. Price \$1.75.

"On Transport for Aircraft" by F.W. Gundry Jr. and Lloyd A. Young, both of Westinghouse Electric Corp. Illustrated, 155 pages. Published by McGraw-Hill Book Co., 130 West 42nd St., New York City. Price \$4.50.

Trade Literature

"The Economic Consequences of Air Power," as edited by J. Corbin Ward, Jr., fourth in a series of lectures (previously presented by the National Air Council) and the Library of Congress. Available upon request to Publications Section, Library of Congress, Washington 25, D.C.

"Map of the Month Club." U. S. Coast and Geodetic Survey issued maps. Information available from Seafair-Aeronautics Co., Lake Field, Dallas, Tex.

"Engineered Metal Engineering Data," an eight page bulletin available upon request to Joseph T. Rector & Son, Inc., Publishers division, Box 3680, Chicago 26, Ill.

"Catalogue Number 12" a clearance list of aeronautical books offered for sale, available upon request to Aeronautical Book Co., Post Office Box 2611, Detroit 18, Mich.

"Load Measuring Beam," as illustrated bulletin, available upon request to Baldwin Locomotive Works Testing Department, Philadelphia 42, Pa.

"University of Illinois Bulletin No. 57," concerning paper presented at the first short course on industrial packaging and materials handling, available from University of Illinois, Urbana, Ill. Price \$5.

"Ship and Ship Equipment," a 16 page booklet on liquid fuel and dispensing equipment, available upon request to West Publishing Co., 420-46 West Street, Long Island City, N.Y.

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5	Sp. Club—D. G. M.C.	16	Agency—The Boston Company	26	Agency—Charles W. Day Co., Inc.
6	Sp. Club—D. G. M.C.	17	Agency—The Boston Company	27	Agency—Seymour, Weiss & Wallace, Inc.
7	Sp. Club—D. G. M.C.	18	Agency—The Boston Company	28	Agency—Seymour, Weiss & Wallace, Inc.
8	Sp. Club—D. G. M.C.	19	Agency—The Boston Company	29	Agency—Seymour, Weiss & Wallace, Inc.
9	Sp. Club—D. G. M.C.	20	Agency—The Boston Company	30	Agency—Seymour, Weiss & Wallace, Inc.
10	Sp. Club—D. G. M.C.	21	Agency—The Boston Company	31	Agency—Seymour, Weiss & Wallace, Inc.
11	Sp. Club—D. G. M.C.	22	Agency—The Boston Company	32	Agency—Seymour, Weiss & Wallace, Inc.
12	Sp. Club—D. G. M.C.	23	Agency—The Boston Company	33	Agency—Seymour, Weiss & Wallace, Inc.
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PROFESSIONAL SERVICES

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SEABOARD SECTION

(Circular Attention)

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Publicity For Air Force Contracts II

The first editorial on this subject appeared in *Axelson Week* Nov. 12, 1946. It pointed out that we had heard frequent complaints that the Air Force was not sufficiently publicizing its contracts. It reported that Axelson Week had been talking about it left of Air Force contracts since August, 1944, without success. Contract figures and some kind of descriptive data should be public property, and some kind of contracts should be posted. Since March, 1949, this limited information has been made available to Axelson Week, and it has been published regularly in this magazine.

"But hundreds of other bid and negotiated contracts never reach the public eye, and we think they should," we wrote last November, adding, "We hope, in all likelihood, that an effort will be made to publicize contracts. A disturbing trend has undoubtedly escaped the notice of top officers in Wright Field."

Axelson Week editorials are written in an effort to be constructive. Editorials should point out danger signals when the editor thinks they appear. But such editorials are seldom popular among those who prefer the status quo.

It seems to us that the current Congressional investigation into U. S. Air Force procurement policy offers new evidence to both the Air Force and the Navy as to why they should conduct their aircraft procurement activities in a strong and steady light of publicity. The more the public is informed of military procurement activities at the time they occur, the less opportunity there will be for Congressional investigations to dig down into daylight later for sensational headline-making disclosures. This means the military logic but unfortunately not all of the policy makers in USAF and Navy procurement seem to have grasped this simple fact.

During the past year both USAF and Navy took a step in the right direction by publicizing the defense and export contracts to be let under the recent purchase expansion appropriations passed by the 80th Congress.

Some of the charges of Congressman Van Zandt regarding USAF procurement activities can be easily disposed of by a simple examination of the published record on USAF aircraft contract awards and cancellations. Some of his other charges cannot be answered without the Venetian investigation because the Air Force has not been willing to make public additional information on its procurement activities, particularly the dollar value of aircraft and engine contracts allocated each fiscal 1949 procurement appropriations.

Both services have been reluctant about making public the dollar value of the specific contracts to each major manufacturer. Both services have been reluctant to make public the results of contracts that are let by negotiation rather than public bid.

One USAF Wright Field general informed *Axelson Week* that publication of the negotiated contracts would have a bad effect on the aircraft industry since it would let each manufacturer know what kind of a deal the other had been able to negotiate.

We think that the manufacturers as well as the public have a right to know what kind of a deal has been made by the Air Force or Navy with the taxpayer's money. If the full facts had been published on the contracts negotiated by the Air Force and the USAF, for example, the facts would be clear and there would be little opportunity for Congressman Van Zandt to draw the broad inclusions that characterize too many of his charges against the Air Force.

As we have reported in several weeks, there is a strong trend within the National Military Establishment to ring down a curtain of secrecy on Air Force procurement activities. Navy has already informed *Axelson Week* that it will reveal no further information on the numbers in type of planes it has an order, even when this information has been released and published previously. We hope that his appearance on Capitol Hill during the coming investigation will convince Mr. Louis Johnson of the folly of turning back the clock to this type of public relations policy.

The current Congressional investigation of USAF procurement policy is the second since the end of the war. It would take an extremely short memory not to recall the Henry Meyer fiasco exposed by the Senate War Investigating Committee and the scathing both the Air Force and aircraft industry took as a result. The dealings of Henry Meyer were conducted in an atmosphere of wartime secrecy and obviously they could not have lasted for long had it been a matter of public record what USAF contracts were being awarded to whom.

As long as there are billions of dollars of public money being spent for military aircraft there will be a backstage of discontent from anyone that feel they are not getting their proper share. It is smart for the services to protect themselves and the industry to which they are dependent from these scathing public reports by showing their procurement cards on top of the table at the time and making their record so clear that there can be little question as to what they are really doing with the billions allotted to them out of the public treasury.

Many of the military objections to turning the full spotlight of publicity on their procurement activities are based on the alleged grounds of military security. However, as a democracy we must guard and maintain government policy against not on a last foundation of public approval. With the alleged gaps in military security begin to compromise the military for the inevitable loss of public confidence that will result from repeated Congressional investigations of their procurement.

It is the public that must pay for the recent peacetime appropriations for military expansion, and if the public begins to get the idea that the military is playing high polo with the taxpayer's dollars, there will be an end to public willingness to support their expenditures, and a return to the public equity as defense and cleanup activities appear those that marked the twenties and early thirties.

Mr. Lawrence G. Fritz,
Vice President in Charge of Operations,
American Airlines, Inc.

"Axelson built superchargers and drive assemblies are an important part of the equipment on our Douglas DC-4's. Service life is increasing appreciably and they have added immeasurably to high altitude passenger comfort in building our passenger traffic."

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BOEING B-50 CIRCLES GLOBE IN 94 HOURS NON-STOP

Fort Worth, Texas—For the first time in history the U. S. Air Force has circled the globe non-stop—23,450 miles in 94 hours. The Lucky Lady, a Boeing B-50 medium bomber, accomplished this amazing feat, refueling four times on the wing.

The B-50 is another ship for which Foote Bros. is producing actuators. The giant jacks on the landing gear, measuring 5 ft. long, are manufactured in Foote Bros. large plants. And in the Pratt & Whitney Major engines "A-Q" Gears aided in setting this new record.



PIASECKI XHJP-1 PROVES WORLD'S FASTEST HELICOPTER

Morton, Pa. — The recently developed Piasecki XHJP-1 unofficially set a world's record of 131 miles per hour, surpassing the official world's record held by the British Fairey "Gyrodyne."

In the new Piasecki, tandem counter-rotating rotors counteract torque with no loss of power. The two main rotor drives for the Piasecki consists of a planetary transmission produced by Foote Bros.

FLYING WING* PROVES ITS PRACTICALITY

Muroc Field, Calif. — On Feb. 10, the famous Northrop Flying Wing* flew non-stop from Muroc Field, California, to Washington, D. C. Its elapsed time was 4 hours and 25 minutes.

The Flying Wing* represents the final realization of Northrop engineers to produce a bomber without the conventional fuselage. Rotation about

the fore and aft and lateral axes is controlled by a unique elevon system which combines the action of elevators and ailerons.

The vital control devices for the elevon system are produced by Foote Bros. These controls occupy a minimum space envelope and are extremely light in weight consistent with reliable operation.

*REG. TRADE-MARK

MAKERS LOOK TO FOOTE BROS. FOR GEARS AND ACTUATORS

Recent records set by America's newest airplanes dramatize the advanced engineering that has played such an important part in their performance.

Manufacturers of these news-making aircraft look to Foote Bros. to provide precision gears, actuators and power units.

Foote Bros. "A-Q" (Aircraft Quality) Gears found important applications in the aircraft field because of their unique qualities of extreme light weight and high efficiency. Despite thin sections, they were able to

transmit heavy loads, and their precision made possible operation at high speeds. "A-Q" Gears are today used on Pratt and Whitney engines, in turbo jet engines and in the giant 19 ft. Curtiss Wright Propellers used on the B-36 as well as on numerous other applications.

Aircraft companies were quick to realize the many applications of Foote Bros. "A-Q" Gears in the development of power units and actuators for a multitude of purposes in aircraft control and operation.



BOEING XB-47 SETS NEW SPEED RECORD

Moses Lake Field, Washington — On February 8th the Air Materiel Command's new bomber, the Boeing XB-47 Stratojet, streaked through the stratosphere at 607.2 miles per hour in the fastest transcontinental flight ever made.

Rated as "light" despite its

125,000 lbs., the XB-47 flew 2,289 miles from Moses Lake, Washington Airport to Andrews Field, Maryland, in 3 hours and 46 minutes.

Foote Bros. produces the landing gear actuators, the slat drive, the flap screws, and the wing flap system for the B-47.

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